Geographical projections: lantern-slides and the making of geographical knowledge at the Royal Geographical Society c.1885 – 1924

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Abstract

This thesis is about the mobilities of geographical knowledge in the material form of lantern-slides and the forces exerted on these by technological and human factors. Owing to its concern with matter, human- and non-human, and its circulation, the thesis addresses the physics of geographical knowledge. The chapters below investigate the Royal Geographical Society's (RGS) ongoing tradition of telling stories of science and exploration through words, objects and pictures in the final quarter of the nineteenth century and as geography professionalized and geographical science developed. These processes occurred within the context of a plethora of technological innovations, including the combination of the older medium of the magic lantern and photographic lantern-slides, integral to a wide range of entertainment, scientific and educational performances across Britain.

In 1886 the RGS began to engage with the magic lantern. Via this technology and the interactive lecture performances in which it featured, I argue that the Society embraced the medium of photography, thereby engendering transformations in methods of knowledge making and to the RGS collections. I study how these transformations influenced the discipline of Geography as it was re-established at the University of Oxford in 1887. I demonstrate the evolution of the RGS's Evening, Technical and Young Persons' lectures, their contingent lantern-slide practices and, consequently, how these moulded, and were moulded by, the RGS Fellowship between c. 1885 and 1924.

The chapters below explore how these innovations in visual technologies and practices arose, how they circulated knowledge and their

effect on geographies of geographical knowledge making. By harnessing the lantern the RGS attracted an expanding and diversifying audience demographic. The thesis demonstrates the interactive nature of RGS lantern-slide lectures and audiences important role in shaping the Society's practices and geographical knowledge. The chapters below argue that it was via the use of the lantern that geography was disseminated to new places. The thesis therefore brings additional perspectives and dimensions to understandings of the circulation of geographical knowledge.

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LIST OF ABBREVIATIONS

BAAS *British Association for the Advancement of Science*

GA *Geographical Association*

GJ *Geographical Journal*

MGS *Manchester Geographical Society*

OUE *Oxford University Extension*

PNHAS *Penzance Natural History Antiquarian Society*

Proceedings *Proceedings of the Royal Geographical Society and Monthly Record of Geography*

RAI *Royal Anthropological Institute*

RGS *Royal Geographical Society*

RI *Royal Institute*

RPI *Royal Polytechnical Institute*

RS *Royal Society*

SA *Society of Arts*

CHAPTER 1. THE ROYAL GEOGRAPHICAL SOCIETY: A SPACE OF 'OVERLOOKED' SPACES[3]

> Nowadays, being an explorer is a trade, which consists not, as one might think, in discovering hitherto unknown facts after years of study, but in covering a great many lies and assembling lantern-slides or motion pictures, preferably in colour, so as to fill a hall with an audience for several days in succession.[4]

Introduction

This was the lament of mid-twentieth-century anthropologist Claude Lévi-Strauss, who perceived the lantern and projector as machines for relating traveller's tales to passive audiences that he understood as being directly opposed to the 'practices and aims' of exploration.[5] Lévi-Strauss also reflected that 'Anthropology is…in a situation quite comparable to that of astronomy.'[6] His own understanding of his profession was that 'The ethnologists mission' was that of 'astronomer of the human constellations.'[7] In this thesis I borrow Lévi-Strauss's analogy of the telescope to investigate the RGS's historical magic lantern and lantern-slide practices between c.1885 and 1924. I take on the role of the ethnological astronomer to investigate the past lantern-slide and human constellations that circulated around, and mutually-influenced each other at the RGS.

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[3] E. Edwards, Material beings: objecthood and ethnographic photographs, *Visual Studies* 17 (1), (2002), 67.

[4] C. Lévi-Strauss, *Tristes Tropiques*, [1955] in F. Driver, *Geography Militant: Cultures Of Exploration And Empire,* Oxford, Blackwell Publishers, 2001, 1.

[5] Lévi-Strauss, *Tristes Tropiques*, [1955] in Driver, *Geography Militant,* 1.

[6] C. Lévi-Strauss, Un Monde des societies, *Way Forum* (March), 1958, 28 in Hénaff, Marcel, translated by Baker, Mary, The anthropologist, the West, and the others in *Claude Lévi-Strauss And The Making of Structural Anthropology,* University of Minnesota Press, 30.

[7] Lévi-Strauss, Un Monde des societies, 28 in Hénaff and Baker, *The anthropologist, the West, and the others*, 30.

The present work is therefore a historical-geographical study in visualization and perspectivism pertaining to the technology of the camera and magic lantern and the intersection of these in RGS practices. Here the theoretical position of perspectivism is taken to mean that all knowledge, whether visual, textual or verbal, and including 'scientific' knowledge that has historically made claims to universal truths, is partial. In this perspective knowledge is limited in its scope by the physical and conceptual location adopted by the knower and is thus implicitly understood to be relatively, circumstantially and plurally constructed. As well as being spatially, and technologically, particular, the thesis is socially-particular. That is to say that it seeks to understand the dynamics between spaces, human actors and the technology of the lantern. Existing studies of the RGS have not sufficiently recognised the RGS staff and Fellowship, nor connected them with the Society's spaces, images and ideas with which they interacted and which, importantly, they shaped and were shaped by. Moreover, the co-constitution of these and their mutually-influencing patterns of circulation within the RGS is lacking. I seek to contribute new insights to these human and physical aspects of the Society by identifying, and visualizing, the multiple spaces of lantern-slide activity. I redress this, firstly, by mapping the Society's lantern-slide geography and, secondly, by inserting an account of the temporal and spatial evolution of the Society's lantern-slide lectures. In doing so I dynamize existing historical understandings of the Society's past activities by following the routes via which lantern-slides were set in motion and made to circulate within, and without, the Society. Below I justify the location and scale of this study. I conclude with a summary of the chapters that follow.

Historical geographies of the RGS

Historiographically, the Society has been conceived and interrogated from a number of vantage points, but a recent institutional history has yet to be written. Certain periods, areas and spaces of the Society have been mapped and critically investigated to a greater extent than others. Founded in 1830, the RGS was one of many nineteenth-century sites that produced knowledge of geography and exploration. The RGS is, however, recognized as having had notable authority amongst these and as such a plethora of scholarly perspectives have coalesced around it.[8] Indeed, the RGS has been described as 'the most significant (though not the only) institutional face of geography in Britain throughout the nineteenth century.'[9] The chapters below show that the lantern's introduction to the RGS and images more generally within the Society's publications and collections were cause for debate. As I show below, this debate over images parallels broader concerns that transcended the practices of the Society. These pertained to the type of geography practiced and promoted,, the status of geography within a wider science-scape and the place of geography education within competing notions of culture. The nature of geography, that is to say 'the kind of geography the Society should represent,'[10] its content, practices, purposes and ultimately, producers and consumers, was often ill-defined and rapidly evolving.[11] This reflected concerns over the place of the

[8] Driver, *Geography Militant,* 21.
[9] J. R. Ryan, Photography, visual revolutions and Victorian geography, in D. N. Livingstone and C. W. J. Withers (Eds), *Geography and Revolution,* University of Chicago Press, 2005, 203.
[10] P. Collier, and R. Inkpen, The RGS, Exploration and Empire and the Contested Nature of Surveying, *Area* 34 (3), (Sep., 2002), 283.
[11] Driver, *Geography Militant*; M. Jones, Measuring the world: exploration, empire and the reform of the Royal Geographical Society c. 1874-93, in M. J. Daunton (Ed), *The Organisation of Knowledge in Victorian Britain,* Oxford University Press, 2005, 313-336; Collier, and Inkpen, The RGS, Exploration and Empire and the Contested Nature of Surveying, 273-283; C. W. J. Withers, D. Finnegan, and R. Higgitt, Geography's other

discipline within the wider spectrum of the British academic canon of knowledge, between the (theoretical) opposing poles of the natural sciences and the humanities. Finally, wider debates about the definition and purposes of culture more generally impacted attempts to institutionalize and discipline geography.

Physical geographies of the RGS: a space of spaces

The RGS has largely been defined in terms of its outward relation to the world and in relation to its ventures in exploration and the tracts of the world that it helped to open up to British imperial and scientific expansion.[12] The RGS's support of exploration in particular geographical and continental regions such as the African rivers, north and South Poles and the exploration of Mount Everest in the nineteenth and twentieth-centuries have received much public attention and scholarly interest.[13] However, the geographies of the Society, as an institution, still have not been fully surveyed.[14] Recent studies have started to locate the RGS within wider and longer-term academic concerns and in relation to a range of British academic institutions and popular locations of knowledge production.[15]

Histories? Geography and Science in the British Association for the Advancement of Science, 1831- c.1933, *Transactions of the Institute of British Geographers* 3 (4), (2006), 433-451; D. N. Livingstone and C. W. J. Withers, *Geographies Of Nineteenth-Century Science*, University of Chicago Press, 2011.

[12] J. R. Ryan, *Picturing Empire: photography and the visualization of the British Empire.* Reaktion Books, London, 1997; T. Jeal, *Livingstone*, 1973; Driver, *Geography Militant.*

[13] Driver, *Geography Militant*; C.W. J. Withers, Mapping the Niger, 1798-1832: trust, testimony and 'ocular demonstration' in the late enlightenment, *Imago Mundi* 56 (2), (2004),170-193; M. Jones, *The Last Great Quest*, Oxford University Press, 2003.

[14] C. R Markham, *Fifty years' work of the Royal Geographical Society*, R.G.S. Publication, 1881; H. R. Mill, *The Record of The Royal Geographical Society 1830 – 1930*, the Royal Geographical Society, published by the RGS, 1930; Driver, *Geography Militant*; Ryan, Photography, Visual revolutions and Victorian geography, 199-238; A. Maddrell, *Complex Locations: Women's Geographical Work In The UK, 1850-1970*, RGS-IBG book series, Wiley-Blackwell, 2009; Jones, Measuring the world, 313-336.

[15] D. Stoddart, 'That Victorian science': Huxley's physiography and its impact on geography, *Transactions of the Institute of British Geographers*, No. 66, November 1975, 17-40; C.W. J Withers, A partial biography: the formalization and institutionalization of

Withers, Finnegan and Higgitt, for example, made a strong case for studies of the status, financial support and reception of geographies across a range of institutional and intellectual contexts.[16] The comparatively recent attention from historical geographers to laboratories, lecture theatres and libraries has formed new micro-fields of exploration for historians of science and geography.[17] The RGS's move from Savile Row in London's West End to Lowther Lodge in South Kensington in 1913 has also been narrated.[18] However, a detailed spatial analysis of the Society and its multiple architectural incarnations, across its nearly two-hundred-year history, has largely yet to be undertaken.[19] The internal landscapes of the Society, its architectural interiors and configurations of the collections which its staff worked with, and around, on a daily basis, and through which its Fellows

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geography in Britain since 1887, in G. Dunbar G. (Ed) *Geography: discipline, profession and subject since 1887 - an international survey*, Kluwer Academic, 2001, 79-119; C.W. J. Withers, Geography, science and national identity: Scotland since 1520, Cambridge University Press, 2001; C. W. J. Withers, and R. J. Mayhew, Rethinking 'disciplinary' history: geography in British universities, c.1580-1887, *Transactions of the Institute of British Geographers*, 27, 2002, 11-29; Withers, Finnegan, and Higgitt, Geography's other Histories?, 433-451; C. W. J Withers, Geography and science in Britain, 1831-1939: a study of the British Association for the Advancement of Science, Manchester University Press, 2010; D. N. Livingstone and C. W. J. Withers (Eds) *Geography and Revolution*, 2005.

[16] Withers, Finnegan, and Higgitt, Geography's other Histories?, 437.

[17] Latour, Visualisation and cognition*, 1 – 40;* Galison, *Image and Logic,* 1-7; B. Latour, *Pandora's Hope, Essays on The Reality of Science Studies,* Harvard University Press, 1999, 113-144; S. Schaffer, *From Physics to Anthropology – And Back Again, Prickly Pear Press,* 1994; P. Galison, *Image and Logic: A Material Culture of Microphysics*, Chicago University Press, 1997; C. W. J. Withers, Towards a history of science in the public sphere, *History of Science*, xxxvi, 1998, 45-78; D. A. Finnegan, Natural history societies in late Victorian Scotland and the pursuit of local civic science, *British Journal for the History of Science*, 38 (1), (2005), 53–72; B. Lightman, Lecturing in the spatial economy of science, in A. Fyfe, and B. Lightman (Eds) *Science in the Marketplace: Nineteenth-century Sites and Experiences*, University of Chicago Press, 2007, 97–132; B. Lightman, *Victorian Popularizers Of Science Designing Nature For New Audiences*, University of Chicago Press, 2007; D. N. Livingstone, *Putting Geography in its Place: Geographies of Scientific Knowledge,* University of Chicago Press*,* 2003; D. N. Livingstone, Text, talk and testimony: geographical reflections on scientific habits. An afterword, *British Journal for the History of Science* 38 (1), 2005, 93–100; S. Naylor, The Field, the Museum and the Lecture Hall: the Spaces of Natural History in Victorian Cornwall, *Transactions of the Institute of British Geographers*, New Series 27 (4), 2002, 494-513; S. Naylor, Introduction: historical geographies of science – places, contexts, cartographies, *British Journal for the History of Science*, 38 (1), 2005, 1–12; J. van Wyhe, The diffusion of phrenology through public lecturing, in Fyfe and Lightman (Eds*) Science in the Marketplace:* 60–96.

[18] L. Walker, The Royal Geographical Society's house: an architectural history, *The GJ* 146 (2), (1980), 178-189.

[19] Walker, The Royal Geographical Society's house, 178-189.

experienced the Society and the particular plurality of geographies it communicated, are comparatively little charted. Crone produced a history of the Society's Map Room to which this thesis adds further dimensions.[20] Expanding the history of the Society's Drawing Office, Jones's account formed an informative adjunct to a study of the Society's survey practices in the field by Inkpen and Collier.[21] Ryan later added insights into the Society's architectural history with a longer view of the 'revolutionary' photographic practices that situated photographs within their sites of display and viewing.[22] His study showed how the construction of the RGS Lowther Lodge lecture theatre in 1929 was conceived and designed specifically around the practice of lantern-slide lectures, rather than solely around the delivery and reception of knowledge in spoken form.[23] Finally, Driver offered a number of interpretations of the RGS, and in envisioning it as a 'knowledge exchange' responsed to Latour's scheme of 'centres of calculation'.[24] By drawing extensively on Bennett's argument that later nineteenth-century museums were centres of learning around which professionalizing sciences coalesced, Driver also noted how material and visual aspects of the Society's exhibitionary practices in its former museum impacted, and were impacted by, the geographies of the Society.[25] I therefore consider the significance of the RGS's move to its first permanent

[20] G. R. Crone and E. E. T. Day, The map room of the Royal Geographical Society, *The GJ* 126 (1), (Mar., 1960), 12-17.
[21] G. S. Holland, The centenary of the Society's drawing office, *The GJ* 146 (2), (July, 1980), 210-217; Collier, and Inkpen, The RGS, Exploration and Empire and the Contested Nature of Surveying; Jones, Measuring the world.
[22] Ryan, Photography, visual revolutions and Victorian geography.
[23] Ryan, Photography, visual revolutions and Victorian geography.
[24] B. Latour, *Science in Action: How To Follow Scientists and Engineers Through Society*, Harvard University Press, 1987, 215-257 in Driver, *Geography Militant*, 32.
[25] D. Harlan, The archaeology of lantern slides: the teaching slide collection of the Ashmolean Museum, Oxford in Crangle, Heard and van Dooren (Eds), *Realms of Light,* 203-210; F. Driver, Hidden histories made visible? Reflections on a geographical exhibition, *Transactions of the Institute of British Geographers* 38 (3), (July 2013), 420–435.

home at 1 Savile Row in 1871, which Mill called ‘the shrine of geography’ and a site he averred, that would be haunted by ‘the spirit of Geography’ (Figure 1.).[26]

Figure 1. Edward Whymper, [The Royal Geographical Society], 1, Savile Row, after a wood engraving, [1894]. (RGS-IBG) Used with permission of the publisher.

[26] Mill, *The Record*, 95*;* Crone and Day, The map room of the Royal Geographical Society, 13.

Figure 2. The Royal Geographical Society, Lowther Lodge, South Kensington. (RGS-IBG) Used with permission of the publisher.

Following the expansion of the Fellowship, and the co-relative ascent of the RGS's scientific and cultural authority, the Society moved to Lowther Lodge in 1913.[27] Below I shed new light on how lantern-slide practices shaped this move. Little is known about the circulation and internal and external geographies of lantern-slides and geography in the nineteenth-century. I therefore study the interaction of these intertwined, external and internal geographies of the RGS geography, and consider whether or not there was a distinction between them. In doing so I provide new insights into the diverse visual, scientific and social spectra of geography across a number of RGS spaces.

The matter of geography: the RGS collections

[27] Mill, *The Record*; Walker, The Royal Geographical Society's house; Driver, *Geography Militant*; Maddrell, *Complex Locations*; S. Evans, CDA Doctoral Thesis University of Bristol UWE in collaboration with the RGS-IBG, *Terra Incognita: Women's Expeditionary work 1913 - 1970*, 2014, 1-304.

The historical geographical imaginary has expanded so as to include the 'wild things' of material culture.[28] Shapin cited lantern-slides amongst his examples of material inscriptions of historically- and geographically-particular human relationship of trust.[29] Scholars suggest that from its conception the RGS was conceived to be a stock of diverse human and non-human material forms of geographical knowledge, a vision for the Society that was inscribed in the Society's founding charter charts, atlases, books and images.[30] Despite this, we know comparatively little about the development of the Society's library, archive and diverse collections, or about the ways in which these materials embodied the RGS values and purposes. The map collections have been extensively scrutinized and catalogued.[31] One of the earliest studies to bridge the gap between the Society's founding aims of promoting both science and exploration was Ryan's history of the RGS photograph collections, geography and imperialism.[32] Jones's important work on the 'hidden histories' of the Society showcased the stereoscopic photographs of James Grant, and

[28] J. Attfield, *Wild Things The Material Culture of Everyday Life*, Berg, 2000; A. Appadurai, *The Social Life of Things Commodities in Cultural Perspective*, Cambridge University Press [1986] 2002; L. Daston (Ed), *Things That Talk, Object Lessons from Art and Science,* Zone Books, New York, 2008, pp. 447; L. Daston (Ed), *Biographies of Scientific Objects*, University of Chicago Press, 2000, pp. 307; F. R. Myers (Ed), *The Empire of Things, Regimes of Value and Material Culture*, School of American Research Press, [2001], 2009, pp. 353; I. Hodder, *Entangled, An Archaeology of the Relationships between Humans and Things*, Wiley-Blackwell, 2012, pp. 252.

[29] Shapin, Placing the view from nowhere: historical and sociological problems in the location of science, 8.

[30] The RGS founding charter had for objectives the collection and authorizing of access to information, books, maps, instruments and other materials for travellers inward and outward bound, the provision of some financial assistance to intended travellers, and the fostering of connections between the Society and individuals, scientific and cultural Societies around the world and Empire. ('Report of meeting of Raleigh Travellers' Club, 24 May 1830, 'The Raleigh Club, 1827–54', Additional papers 115, Royal Geographical Society, London (RGS) in Jones, *Measuring the world,* 315.)

[31] F. Herbert, The Royal Geographical Society's Membership, the map trade, and geographical publishing in Britain 1830 to ca 1930: an introductory essay with listing of some 250 Fellows in related professions, *Imago Mundi* 35, (1983), 67-95.

[32] Ryan, *Picturing Empire.*

enriched understandings of Everard Im Thurn's photographic practices.[33] Recently, Driver undergirded the basis of exploration and the production of geographical knowledge, from the early modern period to the present, in the mobilization of images. [34] Although this study relates to previous investigations of the photograph collections, unlike Ryan's early study it also addresses the fulfillment of the Society's aims of the promotion and diffusion of geography by exploring the lantern-slide lectures in which photographs were viewed. As Driver stated of the 'hidden histories' of local peoples involved in British exploration, it 'was time to bring them into the limelight'.[35] Scholars have barely turned their attention to the instruments within RGS collections. Here I start to redress this by investigating the role and place of the technology of the lantern in the RGS's historical practices. My contributions build on the important foundations laid down, principally, by Ryan.[36] Finally, there is still much scope for analysis of the Society's manifold publications.. Here I add to the history of the Society in drawing on the published lantern-slide lectures and the discussions that followed them in the *Proceedings* and the *GJ*. This study also shines new light on what Driver described as the 'magical caskets' of the RGS.[37] Here I suggest that these can be likened to Latour and Lorimer's 'black-boxed ideas', but also to the 'boxes of ghosts' alluded to by Mannoni.[38] Golinski's 'black-boxing' to

[33] L. Jones, *Local Knowledge, Indigenous Agency and the Role of Intermediaries in the History of Exploration: Studies from the RGS-IBG Collections*. PhD Thesis, Royal Holloway, University of London, 2010.
[34] Driver, Hidden histories made visible?, 420. This history of images and geographical exploration most likely predates the early modern, or classical, age of European exploration.
[35] Driver, Hidden histories made visible?, 421.
[36] Ryan, *Picturing Empire*; J. R. Ryan, Who's afraid of visual culture?', *Antipode* 35 (2), (2003), 232-237; Ryan, Photography, visual revolutions and Victorian geography.
[37] Driver, *Geography Militant,* 5.
[38] B. Latour, *Pandora's Hope, Essays on The Reality of Science Studies,* Harvard University Press, Cambridge, 1999, 130; Lorimer and Spedding, Excavating geography's hidden spaces, 229; Mannoni, *The Great Art of Light And Shadow,* 288. The quote comes

denote the authorization of an instrument as a knowledge making form can be juxtaposed with these.[39] Finally, Rossell's frame of 'Black box technological history' frames these idioms.[40] della Dora's tracing of worlds in boxes, discussed below, also figures in this sequencing.[41]

The human geographies of the RGS: staff, lecturers and audiences as the movers, shakers and makers of geography

In addition to the collections assessed above, the RGS staff, Officers and Fellowship, constitute the richest material of the Society. Yet they also form the dark matter and another 'hidden' facet of the Society.[42] The tale of the lantern presented below elucidates aspects of the historical activities of the RGS staff and officers. I argue here that the production of geographical knowledge in the period c. 1885 to 1924 was, as with exploration in the notionally distant field, 'fundamentally a collective experience of work, involving many different people in many different kinds of relationship'.[43] This study thus tells the 'little stories' of the collections, spaces, staff and Officers of the RGS whose 'global lives' effectively perpetuated a tradition of world brokering.[44] It shows the important diversity of knowledge makers such as professional practitioners of a range of sciences and the 'would be popularizers', thereby demonstrating the contributions of the many who co-

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from Etienne Gaspard Robertson, disseminator if not quite inventor of the phantasmagoria (Mannoni, *The Great Art of Light And Shadow,* 167-175).

[39] Golinski, *Making Natural Knowledge,* 138-141.

[40] D. Rossell, Demolition d'un mur: The social construction of technology and early cinema projection systems, *Early Popular Visual Culture* 12 (3), 2014, 311-12.

[41] V. della Dora, Putting the World into a Box: A Geography of Nineteenth-Century 'Travelling Landscapes', *Geografiska Annaler. Series B, Human Geography*, Vol. 89 (4), 2007, 287-306.

[42] Jones, *Local Knowledge, Indigenous Agency and the Role of Intermediaries in the History of Exploration*.

[43] Driver, Hidden histories made visible?, 421.

[44] H. Lorimer, Telling small stories: spaces of knowledge and the practice of geography. *Transactions of the Institute of British Geographers,* 28, 2003, 197–217; M. Ogborn, *Global Lives*, *Britain and the World, 1550*-1800, Cambridge University Press, 2008; Schaffer, Roberts, Raj and Delbourgo (eds), *The Brokered World: Go- Betweens and Global Intelligence, 1770-1820.*

produced geographical knowledge, but who 'were rarely centre stage'.[45] Even today historical geographers fall into the trap of creating heroes and villains, and triumphs and tragedies, in their historical narratives following, sometimes unconscious, personal inclinations and prevailing academic currents of thought.[46] Consequently, the task of mapping the historical social spectrum of the RGS, and of re-pluralising and repopulating it, is an ongoing one. The institution has, for the most part, been analyzed on the scale of individual explorers, most famously Livingstone, Stanley, Scott and Shackleton.[47] The role of Sir Roderick Murchison (1792-1871), geologist, and four-times serving President of the RGS between 1844-46, 1851-53 and 1866-68 and 1862-71 has been the subject of concerted biographical focus.[48] Murchison, a founding figure of the Society, and a colossus across the nineteenth-century stage of London's scientific societies, has been likened to a benevolent dictator.[49]

Yet following Murchison's death in 1871, the RGS, arguably, evolved into a more collectively-governed Society of constituent parts. That is to say the RGS gradually moved towards becoming a society.[50] The historical geographers of the 'Unlocking the Archives' project are currently in the process of opening up an exciting new field of research that recognizes the

[45] A. Bonnett, Geography as the world discipline: connecting popular and academic geographical imaginations, *Area* 35 (1), (Mar., 2003), 55-63; Withers, Towards a history of geography in the public sphere, 45-78; B. V. Lightman, *Victorian Popularizers Of Science*, 2007,13; Driver, Hidden histories made visible?, 421.
[46] Mill, *The Record*; E. A, Reeves, *Recollections of A Geographer,* Seeley, Service and Co London, 1933; D. Stoddart, The RGS and the foundations of geography at Cambridge, *Geographical Journal* 141, (1975), 231; Stoddart, Geography and war, 88; Jones, Measuring the world, 334.
[47] F. Driver, Henry Morton Stanley and His Critics: Geography, Exploration and Empire, *Past & Present* 133, 1991, 134-166.
[48] R. Stafford, *Scientist of Empire: Sir Roderick Murchison, Scientific Exploration and Victorian Imperialism*, Cambridge University Press, 1989.
[49] P. Z. Cox, Address at the Annual General Meeting of the Society held on 24 June 1935, *The GJ* 86 (2), (Aug., 1935), 89-96.
[50] D. N. Livingstone, *The Geographical Tradition: Episodes In The History of A Contested Enterprise*; Jones, Measuring the world: exploration, empire and the reform of the Royal Geographical Society c. 1874-93.

importance of staff in particular networks of production and consumption, such as suppliers, artisans and craftworkers who passed on the technical skills, the labor and resources necessary to the fashioning of images and staging of scientific performances.[51] Their endeavors shaped the images and idioms of the emergent discipline of geography. This thesis responds to scholarly calls for attention to practices and the mundane practicalities in geography's teaching and research institutions in its attention to the activities and influence of a broader human assemblage.[52] This assemblage includes Secretaries, Honorary Secretaries, Librarians and Map Room Curators, instructors and clerks who have been, if not ignored, then overshadowed by research into explorers, presidents and academic geographers.[53] A host of half-forgotten, and sometimes marginalized, figures and groups who crafted geography at the RGS await to be rediscovered.[54] Consequently, some of the individuals active in the daily running of the Society from the 1880s to 1914, figure in more detail in the chapters below.

Stoddart noted that the role of Douglas Freshfield (1845-1934), RGS Honorary-Secretary 1881-1893, mountaineer and first President of the GA from 1893, in the reform of the Society posed 'a challenge' for future

[51] A. Gell, *Art and Agency: An Anthropological Theory,* Clarendon Press, Oxford, 1998, 3; S. Shapin, The Invisible Technician, *American Scientist*, 77(6), 1989, 554-563; I. R. Morus, Seeing and believing science, *Isis* 97 (1), (March 2006), 107; E. Edwards, Photographs and the sound of history, *Visual Anthropology Review* 21 (1–2), (2005), 27–46; R. Vokes, Reflections on a Complex (and Cosmopolitan) Archive: Postcards and Photography in Early Colonial Uganda, c.1904–1928, *History and Anthropology* 21 (4), (2012), 375-409.
[52] B. Latour, *Visualisation and cognition: drawing things together*, in H. Kuklick (Ed.) *Knowledge and Society Studies in the Sociology of Culture Past and Present*, Jai Press vol. 6, 1986, 2.
[53] M. de Certeau *The Practice Of Everyday Life,* University of California Press, 2002; H. Lorimer and N. Spedding, Excavating geography's hidden spaces, *Area,* 34.3 (2002), 294-302; Morus, Seeing and believing science, 107; Lightman calls this 'bottom up histories' in B. V. Lightman, *Victorian Popularizers Of Science,* 7.
[54] Latour, Visualisation and cognition, 1- 40.

researchers.[55] Also considered here is Sir Clements Markham (1830-1916), RGS Honorary-Secretary 1862-1888 and President 1893-1905, who was, for Stoddart, 'flawed'.[56] The chapters below uncover the positive and negative forces Freshfield and Markham exerted over the Society's visual and knowledge making practices.

Chapter 5 presents new information about the Secretaryship of Henry Walter Bates (1825-1892), the naturalist and RGS Secretary 1864-1892. A pivotal figure in the reformation of the Society, Bates was eulogized by Mill and his co-author Freshfield.[57] I also add new understandings to John Scott Keltie (1840-1927), author of the 1885 report on geographical education, RGS Librarian 1896 -1892, and RGS Secretary from 1892-1915 and editor of the *Proceedings* and, from 1893 the *GJ* until 1917.

Chapters 8 and 9 elucidate the profound and far-reaching influence of Dr. Hugh Robert Mill (1861-1950), lecturer in Physiography and Commercial Geography at the Edinburgh Heriot-Watt College from 1886, RGS Librarian from 1892-1900, meteorologist and later historian of the Society.[58] I also present new facets of John Coles (1833-1910), the RGS Map Room Curator and Instructor in Survey and Astronomy 1877-1900 in Chapter 9. Additional insights about the role and influence of the traveller and photographer John Thomson (1837-1921) explorer and photographer, first RGS Instructor in Photography from 1886, figure in Chapters 4 and 5. Finally, Chapter 4 introduces H.W. Simpson (1864-1940), the RGS office boy turned junior clerk from 1878, and lantern projectionist from 1890-1923,

[55] D. R. Stoddart , The RGS and the 'New Geography': changing aims and changing roles in nineteenth century science, *The GJ* 146 (2), (Jul., 1980), 201.
[56] Death of Sir Clements Markham, *The GJ* 47 (3), (Mar., 1916), 161-176; Stoddart, Geography and war, 88.
[57] Mill, *The Record,* 104.
[58] D. Stoddart, 'That Victorian science': Huxley's physiography and its impact on geography, *Transactions of the Institute of British Geographers* 66 (November), 1975, 26.

lantern-slide maker 1890-1937.

The Fellowship of the Society comprises the dark matter and one of the least explored areas of the Society. Scholars have started to map the wider geographical, scientific, and social contexts in which the RGS operated by examining the demographic of the RGS Fellowship and its diversification throughout the nineteenth century. The initial core of naval and military men, Stoddart advanced, was joined by a fluctuating number of geologists and natural historians.[59] The professionalization of geography in academic institutions in the final decades of the century brought new changes to the Fellowship. Like many local and indigenous individuals involved in exploration in 'the field', the histories of audiences had been hidden from view for too long.[60] The present study therefore seeks to bring the diverse audiences of the RGS lantern-slide lectures centre stage. Economic and social pressures ensued from the Society's decision to sponsor educational activities. These pressures engendered tensions when the admission of women was debated in the RGS between c.1888 and 1893.[61] More recently the character of the demographic has been approached from a feminist perspective. Numerous studies have concentrated on the admission of women to the Society, and the subsequent important contributions by women to the activities of the RGS and geography.[62] The Society's central position of influence in the establishment and expansion of the academic discipline of geography, and its influence on wider scientific subjects, is increasingly being questioned,

[59] Stoddart , The RGS and the 'New Geography', 191.
[60] Driver, Hidden histories made visible?, 421.
[61] Stoddart , The RGS and the 'New Geography', 190-192.
[62] M. Domosh, Toward a feminist historiography of geography, *Transactions of the Institute of British Geographers* 16, (1990), 95-104; M. Bell and C. McEwan, The Admission of Women Fellows to the Royal Geographical Society, 1892-1914; the Controversy and the Outcome, *The GJ* 162 (3), (1996), 295-312; Maddrell, *Complex locations*; Evans, *Terra Incognita: Women's Expeditionary work 1913 - 1970*, 1-304.

notably in studies such as that by Jones.[63] By contextualization within wider nineteenth-century social, political and cultural processes, the Society is now seen as having been influenced as much by wider phenomena such as liberalism, internationalism, secular evolutionary theory, theories of relativity, the women's emancipation movement, the expansion of the nation-state and changes engendered by technological change, as it was influential upon them. This study builds on these works.

Geographical science and entertainment: 'That most important and entertaining branch of knowledge, geography' [64]

The evolution of the RGS's attempts to fulfill its founding purposes has drawn scholarly energies.[65] Following Murchison's death the RGS Fellowship continued to expand and the range and scale of activities supported by the RGS diversified. The functioning of the constituent parts of the Society that were, at times, synchronous and at others dissonant, is one concern of this thesis. Of particular, though little apprehended, importance in the wake of Murchison's death, was the RGS's function as a mediator between other sciences such as geology, natural history, astronomy and geography.[66] From the 1870s it was through the ongoing efforts of the Society and a group of prominent individuals with a spectrum of scientific interests that the place of geography within wider sciences became more deeply and broadly entrenched, notably through the communication of

[63] Jones, *Local Knowledge, Indigenous Agency and the Role of Intermediaries in the History of Exploration.*
[64] RGS Founding charter, 24 May 1830 in Driver, *Geography Militant,* 27.
[65] Mill, *The Record*; Livingstone, *The Geographical Tradition*; Driver, *Geography Militant*; Collier, and Inkpen, The RGS, exploration and empire and the contested nature of surveying; Jones, Measuring the world; Ryan, Photography, Visual revolutions and Victorian geography.
[66] Livingstone, *The Geographical Tradition*; Collier and Inkpen, The RGS, exploration and empire and the contested nature of surveying; Jones, Measuring the world; Livingstone and Withers (Eds), *Geographies of Nineteenth-Century Science*.

knowledge via lantern-slide lectures. This constitutes a second core theme of this thesis. The final decades of the nineteenth century were, in Stoddart's view, significant since it was then that leading RGS figures of Douglas Freshfield and John Scott Keltie 'were instrumental in claiming for geography a subject matter, a method and a role, against the powerful claims of sister sciences'.[67]

The character and demographic of the RGS Fellowship 'changed markedly' within the wider climate of professionalizing science, which saw the specialization of the natural sciences.[68] Together with other nascent sciences, geography, Livingstone advanced, was deeply implicated in various magical practices, notably astronomy.[69] The chapters below show that geography, as it was practiced, promoted and diffused by the RGS at the end of the nineteenth century, continued to evolve in close collaboration with other sciences and technologies. Ryan's study of the RGS's nineteenth-century photograph holdings expanded understandings of the Society's support of nineteenth-century science, and the RGS's reception and interpretation of secular evolutionary theory. Within this thesis this theory is understood as an ideology, by demonstrating the imbrication of geography and anthropology. This study casts new light on the institutional evolution of the RGS, and the tale of geography's professionalization through its interaction with, not only emergent social sciences, but also physical sciences of meteorology and oceanography. In doing so the thesis draws from Driver's claim that visual practices may, in certain contexts, become routine, such as in teaching and research practices, where, as Rose noted, 'the presentation has long been established as a specific mode of

[67] Stoddart , The RGS and the 'New Geography', 191.
[68] Stoddart , The RGS and the 'New Geography', 190.
[69] Livingstone, *The Geographical Tradition,* 349.

performance, conjoining particular kinds of visual technology with the communication of authoritative truths according to the conventions of the academy'.[70] The specialization of contingent disciplines as well as a growing professionalization within the RGS' own activities and in the trade of the geographer as defined by the Society, assisted in the founding of the 'new' geography in the later 1880s. This thesis offers new perspectives on the RGS's position within the cross-currents of nineteenth-century science.

The chapters below also investigate the Society's role in continuing to promote a tradition, the source of its foundation, within the longer-term practice of natural magic, of what Livingstone calls 'a geographical involvement with the numinous'. [71] Geographical lore, he asserted, 'continued to confirm long-held beliefs'.[72] Such a double-bind of science and religion has been noted elsewhere, for example by Golinski.[73] Matless further synthesized the textual and material assemblages of this tradition in the lives of Francis Younghusband and Vaughan Cornish, modernity and the emergent modern conservation movement in the later nineteenth-century.[74] Such patterns bring the involvement of geography, conceived by Livingstone as 'the handmaiden to theology,' up to the twentieth century.[75] This study aims to transpose these concerns to the context of the RGS by studying the diffusion of this tradition of the 'numinous' via its manifestation in lantern-slide lectures and thereby suggesting its presence on the ground in exploration and in photographic practices in the field. Via a discussion of

[70] Rose, On the need to ask how, exactly, is geography 'visual'? in Driver, Hidden histories made visible?, 420.
[71] Livingstone, *The Geographical Tradition,* 349.
[72] Livingstone, *The Geographical Tradition,* 349.
[73] Golinski, *Making Natural Knowledge, 49-51 and 54-55.*
[74] D. Matless, Nature, the modern and the mystic: tales from early twentieth century geography, *Transactions of the Institute of British Geographers* 16 (3), (1991), 272-286.
[75] Livingstone, *The Geographical Tradition,* 352; Matless, Nature, the modern and the mystic, 272-286.

the ongoing tradition of magic and the numinous within geography, Livingstone alluded to 'the role of apparently non-rational discourse in the evolution of the discipline.'[76] This sets the RGS's lantern-slide lectures in a wider tradition of the transcendent and the sublime across the sciences that sources some of its inspiration in eighteenth, and early nineteenth-century romanticism.[77] Consequently, below I contribute new understandings to the historical discursive practices of geography by investigating the RGS lantern-slide collections and, specifically, the use of the lantern-slide medium in lectures. I bring precision to the notion of a lecture by studying the synergy of words and lantern-slide projected images as these were expressed in the recorded, and edited audience responses in the discussions that followed the Society's lectures. I therefore open a line of investigation that connects the spectrum of the RGS Fellowship, with the Society's spaces, visual and verbal knowledge communication practices in lectures and the hitherto unexplored space of the Society's publications. By studying 'the transfer of information from one accelerated frame of reference to another', in the words of Latour, I hope to see 'through cracks into the discourse, to the character in the flesh listening to the story or watching the scene.'[78]

[76] Livingstone, *The Geographical Tradition,* 349.
[77] J. Holmes, The X Club: romanticism and Victorian science, 12 -31 in D. Clifford, E. Wadge, A. Warwick and M. Willis (Eds), *Repositioning Victorian Sciences: Shifting Centres in Nineteenth-Century Scientific Thinking,* Anthem Press, 2006; G. Levine, Daring to know: Karl Pearson and the romance of science, 220-243 in *Dying to Know Scientific Epistemology and Narrative in Victorian England*, The University of Chicago Press, 2002; C. Trowbridge, 'Speakers concerning the earth': Ruskin's geology after 1860, 17-30, in Clifford, Wadge, Warwick and Willis (Eds**)** *Repositioning Victorian Sciences*; B. Bensaude-Vincent and C. Blondel (Eds), *Science and spectacle in the European Enlightenment*, Science, Technology and Culture, 1700-1945 series, Ashgate Publishing, 2008.
[78] Latour, How to be iconophilic in art, science and religion in Jones and Galison (Eds), *Picturing Science Producing Art*, 429.

Driver conducted extensive explorations of the RGS's engagement in notional entertainment activities and exhibitionary practices.[79] Bonnett framed these processes in relation to historical and contemporary geography, but did not take the mediating role of images and technologies into account.[80] Withers undertook a text-based, rather than visual, analysis of what he considered to be the popularization of geography in the eighteenth century.[81] Although both illuminated the polyphony of scientific and geographical knowledge communication across diverse lecture theatre venues, Livingstone and Finnegan ignored the images used in such performances.[82] Keighren, however, edged towards the study of the interaction of the visual and verbal knowledge forms via his study of the reception of Ellen Semple's theory of anthropogeography in 'popular' lectures.[83] In discussing the historical role of photography in geography and exploration Ryan concluded that distinctions between the popular and the scientific were 'muddled' and that the Society's efforts to establish and further the 'new geography' gave rise to many debates over the definitions of what was and was not deemed to be either scientific or popular knowledge and practices.[84] The above studies thus inform my analysis of

[79] Driver, *Geography Militant.*
[80] A. Bonnett Geography as the World Discipline: Connecting Popular and Academic Geographical Imaginations, *Area* 35 (1), (Mar., 2003), 55-63.
[81] Withers, Towards a history of geography in the public sphere, 45-78.
[82] D. N. Livingstone, Text, talk and testimony: geographical reflections on scientific habits. An afterword, *British Journal for the History of Science* 38 (1), (2005), 93–100; Finnegan, Natural history societies in late Victorian Scotland and the pursuit of local civic science, 53–72; Finnegan, D. A., Exeter-Hall science and evangelical rhetoric in mid-Victorian Britain, *Journal of Victorian Culture* 16 (1), (2011), 46-64; Finnegan, D. A., Geographies of scientific speech in mid-Victorian Edinburgh in Livingstone and Withers (Eds), *Geographies of Nineteenth-Century Science*, 153-177; I. M. Keighren, *Reading the reception of Ellen Churchill Semple's Influences of geographic environment (1911).* Doctor of Philosophy The University of Edinburgh, 2008. I. M. Keighren, Giving voice to geography: popular lectures and the diffusion of knowledge, *Scottish Geographical Journal* 124 (2 & 3), (2008), 198-203.
[83] Keighren, Giving voice to geography.
[84] Ryan, Photography, visual revolutions and Victorian geography, 215.

the RGS's historical lecture practices and the effects of lantern-slide use in them.

Latterly scholars such as MacDonald have sought to scrutinize and particularize geography's transcendental field of vision. The scope of MacDonald's investigation overcame the visual materialities of images such as photographs and lantern-slides in order to incorporate the architectural structures, light spaces, embodied engagements and conceptual stances through which geography's disciplinary perceptions of the visual has been historically manifested and taught. Existing studies of lantern and other visual media practices provide useful models.[85] In thinking with, and around, these studies I contribute to understandings of London's urban lecturing and visual landscape, as well as to those of science and geography that were performed beyond the RGS and adapted to a range of audience demographics. Lecture demonstrations and the elucidation of knowledge and science via the support of visual aids both in the past and in the present can be situated on this spectrum of storytelling.[86] Indeed, 'geographers', it has been argued, 'are nothing but storytellers'.[87] Storytelling practices and oral cultures now occupy scholarly energies and in arguing for space, historical geographers have asserted that academic and disciplinary

[85] J. N. Hays, The London lecturing empire, in I. Inkster, and J. Morrell (Eds), *Metropolis and province: Science in British culture, 1780–1850*, Routledge, [1983], 2007 (Accessed via the British Library www.bl.uk), 91–112; V. R. Schwartz and, J. M. Przyblyski (Eds), Cities and the built environment, *The Nineteenth-Century Visual Culture Reader,* Routledge, 2004, 165-166. For more on nineteenth-century middle class public cultures see S. Gunn, *The Public Culture Of The Victorian Middle Class, Ritual and authority in the English industrial city 1840 – 1914*, Manchester University Press, 2007, 207; R. C. Leveridge, 'Limelights and shadows': popular and visual culture in South West England, 1880-1914, University of Exeter Doctoral Thesis, 2011; Naylor, Introduction: historical geographies of science, 1-12; Rossell, Demolition d'un mur, 304–341.

[86] C. Taylor, *The Art and Science of Lecture Demonstration*, Institute of Physics Publishing, 1998, 11; H. Lange-Fuchs, Samuel Reyher of the University of Kiel: the first audio-visual lecturer? in Crangle, Heard and van Dooren (Eds), *Realms of Light,* 135-137.

[87] N. Entrikin, *The Betweeness Of Place: Towards A Geography Of Modernity.* The Johns Hopkins University Press, 1991, 58 in V. della Dora, Travelling landscape-objects, *Progress in Human Geography* 33 (3), (2009), 337.

interiors have previously been neglected.[88] As a consequence a wave of research has spotlighted 'lecture theatres, seminar rooms, libraries, meeting rooms, social spaces and in laboratories as geography's domestic environment - and as its teaching 'chalkface''. [89] The evolution of geography's 'localized, embedded cultures' across these sites, and the specific interpretations of the discipline's epistemological debates, made by these sites to the development of geography by adapting knowledge to a range of audiences is therefore investigated below.[90]

The Society's founding aims to promote and diffuse the scientific and entertaining aspects of geography coalesced in the Society's educational endeavors and efforts to construct an 'educational ladder'.[91] For Stoddart professionalization was manifested in the Society's support for geography school and university education.[92] From the 1880s and 1890s the promotion of geography in schools and universities became one of the RGS's principal activities. As Chapter 5 shows, it was at this time that the Society first adopted the magic lantern. Consequently, the institutionalization of geography in regional societies and in academic settings such as Oxford and Cambridge has received much attention, thereby highlighting the need for further mapping of broader regional and metropolitan disciplinary

[88] Lorimer and Spedding, Excavating geography's hidden spaces, 298.
[89] Lorimer and Spedding, Excavating geography's hidden spaces, 298; Evans, *Terra Incognita*, 1-304.
[90] Lorimer and Spedding, Excavating geography's hidden spaces, 298.
[91] Lord Aberdare, December 1885, In the discussion that followed E. G. Ravenstein, On the Aims and Methods of Geographical Education, *Proceedings of the RGS,* New Monthly Series 8 (2), (Feb., 1886), 121. The metaphor of the educational ladder may owe something to the metaphorical ladder of St John Scholasticus, or Climacus, (Translated by Archimandrite Lazarus Moore, *St. John Climacus, The Ladder of Divine Ascent*, Faber and Faber, 1959.
[92] Stoddart , The RGS and the 'New Geography'; M. Wise, The Scott Keltie Report 1885 and the Teaching of Geography in Great Britain, *The GJ* 152 (3), (1986), 367-382; T. Ploszajska, *Geographical Education, Empire and Citizenship, 1870–1944*, doctoral thesis submitted to Royal Holloway: University of London, 1996.

histories.[93] The Society's role in crafting and promoting geographical science within academic contexts has focused upon a handful of male academic geographers, foremost Halford Mackinder (1861-1947), first Reader in Geography at Oxford from 1887.[94] The 'new' geography promulgated by Mackinder and the position that he, and a number of RGS Officers and Staff, collectively created for the discipline in British school and university education in the late nineteenth and early twentieth centuries has been extensively investigated.[95] The nurturing of geography education by the RGS constitutes yet another focal point with investigations of the educational report of 1885 produced by John Scott Keltie, the RGS Assistant-Secretary from 1893 – 1913, and a wave of research on geography education, citizenship and empire.[96] These studies provided an important foundation, yet the Society's efforts to promote geography education and science have barely been explored. Driver noted a strong

[93] Stoddart, The RGS and the foundations of geography at Cambridge; D. I. Scargill, The RGS and the foundations of geography at Oxford, *The GJ* 142 (3), (Nov., 1976), 438-461; T. W. Freeman, The Manchester and Royal Scottish Geographical Societies, *The GJ* 150 (1), (1984), 55-62; F. Driver and A. M. C Maddrell, Geographical education and citizenship: introduction, *Journal of Historical Geography* 22 (4), (1996), 371; Ryan, *Picturing Empire*; Ploszajska, *Geographical Education, Empire and Citizenship, 1870–1944*; Driver, *Geography Militant,* 206.

[94] E. W. Gilbert, The Right Honourable Sir Halford J. Mackinder, P. C., 1861-1947, *The GJ* 110 (1/3), (Jul. - Sep.1947), 94-99; E. W. Gilbert, Seven Lamps of Geography. An Appreciation of The Teaching of Sir Halford J. Mackinder, *Geography* 36 (1), (March 1951), 21-43; B. W. Blouet, Sir Halford Mackinder 1861-1947: some new perspectives, Oxford: School of Geography, 1975, Res. Paper No. 13; P. Coones, *Mackinder's Scope and Methods of Geography After One Hundred Years*, The School of Geography: University of Oxford, 1987; G. Kearns, *Geopolitics And Empire: The Legacy Of Halford Mackinder,* Oxford University Press, 2009; G. O' Tuathail, *Putting Mackinder in His Place*, *Political Geography* II (1), (January 1992), 100-118; R. Mayhew, Halford Mackinder's 'new' political geography and the geographical tradition, *Political Geography* 19 (6), (August 2000), 771-791.

[95] Stoddart, The RGS and the 'New Geography'; Wise, The Scott Keltie Report 1885 and the teaching of geography in Great Britain; Coones, *Mackinder's Scope and Methods of Geography After One Hundred Years*; Balchin, *The Geographical Association: the first hundred years 1893-1993*; R. Mayhew, Halford Mackinder's 'new' political geography and the geographical tradition, 771-791.

[96] Holland, The centenary of the Society's drawing office; Wise, The Scott Keltie Report 1885 and the teaching of geography in Great Britain; Stoddart, The RGS and the 'new geography'; Jones, Measuring the world; Driver and Maddrell, Geographical education and citizenship; Ploszajska, *Geographical Education, Empire and Citizenship, 1870–1944*; Ryan, *Picturing Empire.*

need to entertain with seriousness 'the idea that in our professional and pedagogic practice as geographers, we are already engaged in the production of imaginative geographies'.[97] This also applies to historical geographies of teaching practices and technologies. Wise outlined the Society's earliest promotion of education such as Clements Markham's lectures to young cadets on the *Worcester* and *Conway* R.N. training ships, and awarding of prizes by the RGS to a handful of public schools throughout the 1870s.[98] The provision of Young Person's Christmas lectures for children from 1892, discussed in Chapter 9, represents another lacuna. There is now a significant amount of research about the educational history of geography that would usefully inform a deeper understanding of this RGS activity and offset the disproportionate preponderance for histories of exploration.

Thesis overview

The chapters below elucidate aspects of historical geography, visual materiality, circulation and audience reception as seen through the RGS lantern lecture practices of c.1885 to 1924, a period covering the years of WW1 that is often associated with a notional social, technological and visual modernity.[99] Vision and visualization, I suggest, is mediated between the images produced by both eyes via a process of parallax within the organ of the embodied brain. 'Each of these projected images,' wrote Mannoni, 'is perceived by our own two camera obscuras, our eyes,' [100] Human

[97] Driver, Hidden histories made visible?, 420.
[98] Wise, The Scott Keltie Report 1885 and the teaching of geography in Great Britain, 367-382.
[99] Dixon, R., *Photography, early cinema, and colonial modernity: Frank Hurley's synchronized lecture entertainments*, London; New York, Anthem Press, 2012.
[100] Mannoni, *The Great Art of Light And Shadow,* 201.

visualization is thus a tripartite process, involving successive optical, chemical and cerebral phases. Similarly knowledge making is at once individual and collective. Consequently, this study seeks to understand how the lantern technology shaped historical geographies of geography. The RGS's adoption of the lantern, I argue, transformed methods of geographical knowledge communication in visual and verbal lecture performances. This engendered changes in geographical ways of seeing and knowing, and the geographies, ie. the peoples and places, involved in the production of geographical knowledge. The thesis presents a historical geography of the reception of the lantern and the use of lantern-slides projected in the RGS lectures to different audiences. Below I assess the conception, transmission and reception of ideas via lantern-slides, and the medium's active shaping of RGS knowledge making practices and more widely those of the discipline of geography.

Chapter 2 examines the historiography of lantern technology. It introduces the conceptual and theoretical framework of this thesis. By tracing aspects of the medium's historical geographical change I show how the technology went from being a toy to a medium that was central to a wide range of entertainment performances across the nineteenth century. In Chapter 3 I elaborate on the study's theoretical roots, specifically those of 'travelling landscape-objects' and 'numinous materiailties' of historical geographer della Dora.[101] I then present the theoretical perspectives adopted in Chapter 4 by tracing the historical geographies of lantern-slide performances over the period c.1885 to 1924. In explaining the RGS's adoption of the lantern, in Chapter 5 I investigate how and why in c. 1886

[101] V. della Dora, Inverting Perspective: icons' performative geographies, in S. Daniels, D. DeLyser, N. Entrikin, D. Richardson (Eds), *Envisioning Landscapes*, *Landscapes, Making Worlds Geography and the Humanities,* Routledge*,* 2011, 334-354.

there was some debate about the aptness of the medium for an institution such as the RGS. At that time there was considerable anxiety over the popularization and scientific status of geographical practices of the Society, notably in regard to religious propagandizing. I then examine the role of the lantern in promoting the practice of photography in geography. Following that I consider in Chapter 6 how the lantern was integral to the RGS's role in evolving the discipline of geography and how the use of the lantern can be used to visualize geography's gradual institutionalization and professionalization in educational and academic settings in the fin-de-siècle era. Chapter 7 assesses the role of lantern-slides in the visual and verbal lecture performances of the RGS Evening lectures between c. 1888 and 1894. The chapter demonstrates how lantern-slides were deliberately harnessed by certain members of the RGS staff to promote a knowledge of scientific practices to the Fellowship. Chapter 8 examines the role of the lantern and of photography in the social construction of scientific authority and methodologies of evidencing in the construction of notions of geographical objectivity and uncertainty. I explore notionally scientific practices and aesthetics and their perceived effects by audiences. I then consider the function of the lantern in the instructive entertainment activities of the RGS and how technical subjects were adapted to non-expert audiences. Chapter 9 assesses the integrality of the lantern to the RGS's educational activities, notably in Young Person's Christmas lectures between c.1892 and 1924. It addresses the lectures given by RGS staff and Officers. I investigate the expanding geographies of geography, including the educational lectures by Halford Mackinder at Gresham College and the Young Person's lectures by commercial lecturers, including women.

Chapter 10 concludes the thesis by reviewing the empirical chapters' contributions to lantern-slide studies, histories of nineteenth-century science and historical geography.

CHAPTER 2. REFRACTING AND DIFRACTING LIGHT: A HISTORIOGRAPHY OF MAGIC LANTERN STUDIES

Introduction

This chapter surveys literatures concerning the technology of the magic lantern and the visual-material medium of the lantern-slide, visual studies and material culture. I assess gaps in these literatures and explain how this thesis contributes to existing research and current debates about the RGS and its role in shaping the scope and methods of geography. Section one examines influential approaches to nineteenth-century visual cultures, glass and visual technologies such as the magic lantern. This illuminates the evolution of visual studies, and the emergence of lantern-slide studies across this field. It highlights the 'hybrid', trans-disciplinary nature of lantern-slide research.[102] I then turn to historical geographical studies of the visual in geography that inform my theoretical approach. I focus on a conversation between historical geographers regarding 'slideness' and its influence on the disciplinary ways of seeing and knowing.[103] The latter highlighted the importance of locational and social particularities in understanding the nature and effects of slide technologies.

Such perspectives have been fertilized by substantial bodies of work beyond the field of geography. In screen culture studies the lantern has been taken as a precursor of both the camera and moving film, and as a vector of religious and political propaganda within the context of later

[102] R. Crangle, *Hybrid Texts: modes of representation in the early moving picture and related media in Britain*, University of Exeter. PhD, 1996.
[103] G. Rose, On the need to ask how, exactly, is geography 'visual'?, *Antipode* 35, (2), (2003), 212-221; F. Driver, On geography as a visual discipline, *Antipode* 35 (2), (2003), 227-231; D. Matless, Gestures around the visual, *Antipode* 35 (1), (2003), 222-226; J. R. Ryan, Who's afraid of visual culture?, *Antipode* 35 (2), (2003), 232-237.

nineteenth-century concerns with social questions of the day.[104] Across the nineteenth century and into the twentieth century the lantern remained central in disseminating information, ideologies and entertainment.

As the 'missing link' in the history of cinema, magic lantern technology is an important, though still little apprehended, ancestor connecting the histories of photography and cinema.[105] Consequently, there is currently considerable inter-disciplinary academic activity around lantern technology and lantern-slides. Such studies may result from both the 'pragmatic turn', an increased concern with issues relating to scientific practice, including experimentation and instruments in the history of science, and the 'material turn', whereby artifacts received increased attention, across the humanities.[106] Historical geographers focused upon the medium's use in instruction and enculturation via geography education and the induction of children into imperial identities.[107] In the 1990s studies by lantern-slide collectors and enthusiasts were gradually situated within academic discourses of the growing area of visual culture studies established in the 1970s and 1980s, and which became a more concerted force throughout the Humanities.[108]

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[104] L. Vogl-Bienek and R. Crangle (Eds), *Screen Culture and the Social Questions 1880-1914,* KINtop 3 Studies in Early Cinema, John Libbey Publishing Ltd. 2014; Mannoni, *The Great Art of Light And Shadow,* 98-102.

[105] R. Crangle, '"Next Slide Please": The Lantern Lecture in Britain, 1890 – 1910', 39 – 47, in R. Abel and R. Altman (Eds) *The Sounds of Early Cinema, Indiana University press*, 2001, 327; R. Crangle, *Realms Of Light: Uses And Perceptions of The Magic Lantern From The 17th To The 21st Century*, Magic Lantern Society, 2005; Kember, *Marketing modernity*; S. E. Popple,'Fresh from the Front': performance, war news and popular culture during the Boer War, *Early Popular Visual Culture* 8, (2010), 401–418; R. C. Leveridge, 'Limelights and shadows': popular and visual culture in South West England, 1880-1914, University of Exeter doctoral thesis in English, submitted May 2011, 1-353.

[106] L. Taub, Introduction: reengaging with instruments, *Isis* 102 (4), (2011), 689-96.

[107] Balchin, *The Geographical Association*; Ploszajska, *Geographical Education, Empire and Citizenship, 1870–1944*; J. R. Ryan , *Photography, Geography and Empire, 1840-1914*, RHUL PhD, 1996.

[108] R. Krauss, Photography's Discursive Spaces: Landscape/View, *Art Journal* 42 (4), The Crisis in the Discipline (Winter), 311-319.

A brief history of the long and transient science of the magic lantern

Estimated to date to the seventeenth century, the lantern and lantern-slides are visual technologies of considerable longevity in European scientific and entertainment practices.[109] The medium constitutes an ambiguous example of a single instrument's potential for constancy and change in function. This is the lantern's paradox since it was an instrument designed for the elucidation of knowledge and around which knowledge was, in turn, constructed. In contrast, the field of lantern-slide studies constitutes a relatively new trans-disciplinary field of research. The current interest in the lantern and lantern-slides is a reflection of greater inter-disciplinarity, the recognition of the social and spatial turns, and increasing prominence of materialities and technologies of science.

Though the histories of the lantern and camera technologies are entwined, those of the lantern and lantern-slides predate photography. In contrast to the lantern's antecedence, the critical theorizing of historical practices of photography pre-dates, and surpasses in its scope, that of lantern studies. Positives and negatives result from this, yet the overlap may now be proving to be of mutual benefit since lantern-slide studies have not followed the teleological form of early histories of photography structured around 'the technical evolution of photographic processes and the artistic achievement of individual photographers'.[110] Neither have they followed histories of other visual media in which there has been a focus on

[109] T. L. Hankins, and R. J. Silverman, *Instruments and the imagination*, Princeton University Press, 1995; B. M. Stafford and F. Terpak, *Devices Of Wonder From The World In A Box To Images On A Screen*, Getty Publications, 2001, 297-306; Mannoni, Nekes, Warner, *Eyes, Lies & Illusions, The Art of Deception*, 13-15; Crangle, Heard and van Dooren (Eds), *Realms of Light,* 56-62.
[110] Ryan, *Photography, Geography and Empire, 1840-1914*, 13.

iconography.[111] This, I argue, is due firstly to the timing of the still small and emergent body of lantern studies, and, secondly, to its coincidence with the by then firmly established tradition of critical theorizing of material and social culture within history and histories of visual culture.[112] From the late 1980s, the influence of anthropological approaches destabilized visual certainties and conceptions of modernism.[113] The 'crisis of representation in the human sciences' that saw the questioning of notions of fact, truth and reality engendered academic inquiries of the visual and of space that were attentive to constructions of meaning.[114] Subsequently, visual studies have been enriched as scholars attained ever-greater scales of spatial, historical and visual specificity. Histories of lantern-slides had also been partly nurtured and transmitted, although not analyzed in relation to, critical theories beyond the bounds of academia, and by enthusiasts and practitioners of the lantern in the second half of the twentieth century.[115] This raises questions about the geographies of knowledge production, the legitimacy of makers of knowledge and the methods that help to define science and understandings of the identity of scientific practitioners.

The nebulous origins of the lantern also inform, and are informed by, innovations in glass and glass technologies. Macfarlane and Martin positioned the material medium of glass within a global temporal and spatial

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[111] C. Fiell and J. R. Ryan, *Memories of a Lost World Travels through the Magic Lantern,* Fiell, 2012.
[112] See Ryan, *Photography, Geography and Empire, 1840-1914* on the work of V. Burgin, (Ed) *Thinking Photography*, 1982; A. Sekula, *Photography Against the Grain,* 1984; and J. Tagg, *The Burden of Representation*, 1988.
[113] J. Clifford, *Writing Culture: The Poetics And Politics Of Ethnography*, 1986; J. Clifford, *Routes: Travel And Translation In The Late Twentieth Century*, Harvard University Press, 1996; J. M. Schwartz, Overlapping ambiguities in S. Daniels, D. DeLyser, N. Entrikin, D. Richardson (Eds), *Envisioning Landscapes*, *Landscapes, Making Worlds Geography and the Humanities,* Routledge, 2011, 228.
[114] Daniels, DeLyser, Entrikin and Richardson (Eds), *Envisioning Landscapes.*
[115] S. Humphries and D. Lear, *Victorian Britain Through The Magic Lantern,* Sidgwick & Jackson, 1989.

frame.[116] They identified the significance of different varieties of glass throughout both local and global historical changes, and perceived how this affected the development of scientific instruments for the purposes of navigation and exploration, such as the telescope, the compass, the sextant, and their role in histories of measurement.[117] However, the lantern did not figure in their assemblage of instruments.

Other studies have subsequently positioned the lantern within a wider frame of scientific instruments. The projection was enabled by a lantern comprising a concave mirror, a glass lens and an artificial light source, of hand-drawn images on glass (Figure 3).[118] The processes sees the image depicted on the lantern-slide projected, ie transported, and enlarged by the light, on to a screen, located at some distance from the lantern (Figure 4).[119]

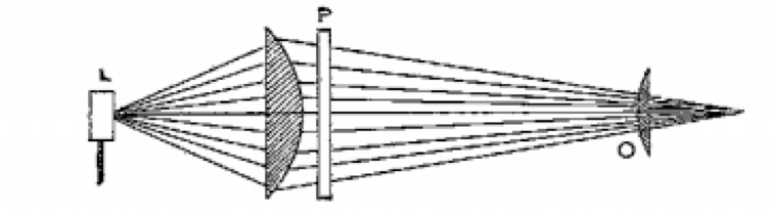

Figure 3. Diagram of lantern components. L: lime cylinder (light source); P: picture (lantern-slide); O: objective lens (made of glass)[120]

[116] A. Macfarlane and G. Martin, *The Glass Bathyscaphe How Glass Changed The World*, Profile Books, 2003.
[117] Macfarlane and Martin, *The Glass Bathyscaphe How Glass Changed The World*, 95.
[118] T. C. Hepworth, *The Book of The Lantern Being A Practical Guide To The Working Of The Optical (or Magic) Lantern With Full And Precise Directions For Making And Colouring Lantern Pictures*, Hazell, Watson, And Viney, 1894, 1-30.
[119] Hepworth, *The Book of The Lantern,* 1894, 86-96.
[120] Hepworth, *The Book of The Lantern,* 1894, 18.

Figure 4. A hand-tinted lantern-slide depicting Herbert Ponting giving a lantern-slide lecture on Japan in Antarctica, 16 October 1911 [Slide set 834, slide 96]. (RGS-IBG) Used with permission of the publisher.

This may have first served the purposes of natural magic to 'emulate the wonders of nature and glorify their "wondrousness"'. [121] Mannoni demonstrated how this practice coalesced around visual philosophical instruments such as the camera obscura, microscopes and lantern.[122] By the late seventeenth century experimental philosophers employed the lantern to 'elucidate the mysteries of life and to establish "matters of fact" in

[121] L. Mannoni, *The Great Art of Light And Shadow, Archaeology of the Cinema*, University of Exeter Press, [1995] 2000, 288; M. A. Schneider, *Culture and Enchantment,* University of Chicago Press, 1993; Hankins and Silverman, *Instruments And The Imagination*, 5 and 69; Mannoni, Nekes, Warner, *Eyes, Lies & Illusions, The Art of Deception*, 215; M. Heard, Now you see it, now you don't: the magician and the magic lantern in R. Crangle, M. Heard, I. van Dooren (Eds), *Realms of Light, Uses and perceptions Of The Magic Lantern From the 17th to the 21st Century*, The Magic Lantern Society, 2005, 13-24.
[122] Mannoni, *The Great Art of Light And Shadow,* 124-5.

the context of the "demonstration" lecture', Inkster stated.[123] In parallel the technology was disseminated and taken up by entertainers and popular lecturers who exhibited the wonders of nature such as the itinerant raree or galantee showmen and women, some of whom were magicians, an existing phenomenon that continued into the nineteenth century (Figure 5.).[124]

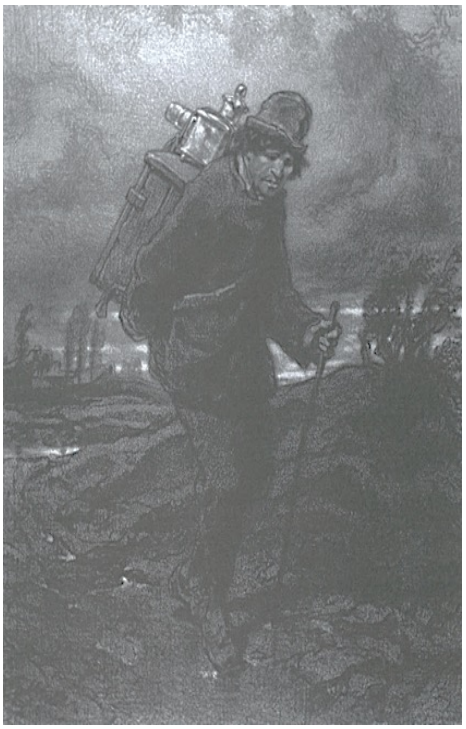

Figure 5. A lanternist (after Gavarni, *lithograph*, Paris, Bertauts, 1854).

Thus from the first both practitioners of natural theology and entertainers employed the lantern. Perceptively, Rossell emphasized the importance of the technology of projection rather than the projected media or the latter's

[123] I. Inkster, The public lecture as an instrument of science education for adults —the case of Great Britain, c. 1750–1850, *Paedagogica Historica* 20 (1), (1980), 80-107; Hankins and Silverman, *Instruments And The Imagination*, 5. See also pages 43-64 for a discussion of the role of the magic lantern in demonstration lectures; Mannoni, *The Great Art of Light And Shadow,* 52-55.

[124] Inkster, The public lecture as an instrument of science education for adults, 80-107; Humphries and Lear, *Victorian Britain Through The Magic Lantern*; V. della Dora, Putting the World into a Box: A Geography of Nineteenth-Century 'Travelling Landscapes', *Geografiska Annaler. Series B, Human Geography* 89 (4), (2007), 289; Mannoni, *The Great Art of Light And Shadow,* 102-3; L. Mannoni and D. Pesenti Campagnoni, *Lanterne Magique et Film Peint 400 Ans de Cinéma*, Editions de la Martiniere, 2009; Kember, *Marketing Modernity,* 61; Bensaude-Vincent and Blondel (Eds), *Science and spectacle in the European Enlightenment*; della Dora, Inverting perspective; Rossell, Demolition d'un mur, 327.

iconography.[125] He stressed that lantern practices were the 'environment into which cinema was born'.[126] Historically, we therefore see a tradition of duality in the function of the medium. In a landscape of changing methods of early natural philosophy the lantern was employed in experimental demonstrations of the seventeenth century.[127] The 'apposite' nature of the lantern and the ease with which it was adapted to different purposes is thus apparent.[128]

Armstrong's history of 'glass worlds' in their material, architectural and technological guises such as that of the lantern and the telescope in Victorian Britain, a period she described as 'the era of public glass', constitutes a landmark study.[129] *Glassworlds* sits within the wave of materialist and phenomenological cultural histories concerned with the lantern and lantern-slides. Its relating of processes of glass production and the innovation of plate glass, the industrialization of the latter, and changing legislation around the industry, distinguishes it. This informs the production of lantern-slides and the emergent ubiquity of the medium over the second half of the nineteenth century. Armstrong's study scrutinized three genres of lens-machines 'those transferring images from one place to another (like the magic lantern), those which distorted or magnified images (like the microscope), and those creating the illusion of motion (like the phenakistiscope)'.[130] Glass lenses, noted Otter, 'made light mobile, enabling light to accomplish its own transformations by making non mimetic images

[125] D. Rossell, Demolition d'un mur: The social construction of technology and early cinema projection systems, *Early Popular Visual Culture* 12 (3), 2014, 304–341.
[126] Rossell, Demolition d'un mur, 304–341.
[127] Hankins and Silverman, *Instruments And The Imagination*.
[128] Hankins and Silverman, *Instruments And The Imagination*, 5.
[129] I. Armstrong, *Victorian Glassworlds: Glass Culture and the Imagination 1830–1880,* Oxford University Press, 2008 in J. McDonagh, Introduction: Roundtable: *Victorian Glassworlds, Journal of Victorian Culture* 14 (1), (2009), 94.
[130] Armstrong, *Victorian Glassworlds: Glass Culture and the Imagination 1830–1880* in McDonagh, Introduction: Roundtable: *Victorian Glassworlds,* (2009), 98.

out of itself.'[131]

This study queries Armstrong and Otter's assertions. Firstly, by countering Armstrong's typology of lens-machines; the lantern, as seen in this study, was implicated in all three processes, ie. transference, distortion (or magnification) and illusionary motion attributed by audiences. Secondly, glass lenses and light did not interact autonomously with one another; nor can lens functions be generalized. In lantern projections the lantern-slide serves as an additional filter. Added to the projected images are additional layers of audience perceptions.

Additionally, it was through the medium of glass that Alberti investigated 'museum nature', suggesting that 'museum nature, like art, is purified in its construction behind glass; complexities and ambiguities are – in principal – removed.'[132] This study of geographical nature suggests a contradictory thesis. Whilst abstraction arose in both graphic forms projected such as maps and photographs this cannot be taken as the extraction of complexities or ambiguities. The process of presenting, through the glass objects of lantern-slides, a species of geographical nature, engendered and propagated complex ambiguities as much as it created certainties. The equation of complexity with either size or scale is thus facile.

Historically, distinctions have been made between lantern-slides, lantern shows and the magic lantern, though each is differently representative of *glassworlds*. The characterization and caricaturing of the lantern exemplifies this. Secord related Harriet Martineau's description of

[131] C. Otter, review essay 'Victorian Ways of Seeing?', *Journal of Victorian Culture* 14 (1), (2009), 98.
[132] S. J.M.M. Alberti, Constructing nature behind glass, *Museum and Society* 6 (2), (Jul. 2008), 83.

her childhood memories of a magic lantern: 'I used to see it cleaned by daylight and to handle all its parts, understanding the whole structure; yet such was my terror of the white circle on the wall, and of the moving slides, that to speak the truth, the first apparition always brought on bowel-complaint.'[133] Whilst Rose questioned whether 'We should ask if the single slide projector is hegemonic in geography because it reiterates the vision of the "seeing-man" described by Mary Louise Pratt (1992:7) "he whose imperial eyes look out and possess'.[134] Later, Schaffer, drew parallels between icons and optical devices such as the lantern. Responses to the lantern suggested a faith in the illusion of the lantern-slide projections to such an extent that audiences felt they were in the 'presence of the phenomenon themselves, stripped of all need for mediation'.[135] Such attributed qualities of the duality of being 'there, yet not really there,' for Schaffer, were iconic.[136] That analysis saw the likening of optical devices employed by Bacon, Hobbes and Newton to expose, in iconoclastic fashion, the idolatry of others. Yet by engaging optical devices to do so, in turn, these individuals became idolatrous and erected icons symbolic of new social and scientific utopias.[137] Latour, latterly, continued his long-running dialogue with the fetish and the lantern.[138] He argued that 'The fetish – at least according to the anti-fetishist – acts so to speak, like an overhead

[133] H. Martineau, *Autobiography*, 2 vols. (1877; Virago, 1983) Vol. 1, 15 in A. Secord, Botany on a plate, pleasure and the power of pictures in promoting early nineteenth-century knowledge, *Isis* 93 (1), (March 2002), 51; M. Simkin, The magic lantern and the child in Crangle, Heard and van Dooren (Eds), Realms of Light, 2005, 28-29.
[134] M. L. Pratt, *Imperial eyes: Travel Writing And Transculturation,* Routledge, 1992, 7 in Rose,
On the need to ask how, exactly, is geography 'visual'?, 216.
[135] S. Schaffer, The devices of iconoclasm, in B. Latour (Ed.), *Iconoclash*, ZKM/Centre for Art and Media, Karlsruhe, Germany and Massachusetts Institute of Technology, 2002, 499.
[136] Schaffer, The devices of iconoclasm, 498.
[137] Latour, *Pandora's Hope,* 498-515.
[138] Latour, *Pandora's Hope,* 266-292. See also F. Nietzsche, *Twilight of the Idols, Or, How to Philosophize with the Hammer*, [Translated by R. Polt], Hackett Publishing Co., [1889], 1997.

projector. The image comes from the professor who has placed a transparency on the glass over the blinding light, but what is shown seems to spring from the screen toward the audience, as if neither the professor nor the overhead projector had anything to do with it. The fascinated spectators "attribute an autonomy to the image" that it does not possess.'[139] The chapters below are, in light of these insights, attentive to audience perceptions of the nature of images, the machine-mediated human existence, and technology-engendered processes of knowledge and science making.

From the 1860s onwards magic lanterns were increasingly employed in the illustration of instructive lectures.[140] Critical to this was the invention of the photographic lantern-slide by the German-born American Langenheim Brothers, and the latter's first display in the U.K. at the Great Exhibition in 1851.[141] Although hand-drawn and painted lantern-slides remained in use after photographic lantern-slides became available, it was this new development that saw the lantern repurposed for, or indeed returned to, scientific practices (Figure 4.).

Lantern-slides, Tucker stated, 'contributed to a multiplicity of scientific visual cultures, from the public lecture to the teaching seminar to rituals of scientific courtesy.'[142] Thereafter in the last two decades of the nineteenth century, the period in which this study opens, the technology was employed for a wide range of purposes and effects. By the mid-1880s, the extensively developed British lantern, lantern-slide and lantern-slide

[139] Latour, *The Modern Cult of The Factish Gods*, 8.
[140] Kember, *Marketing Modernity,* 61.
[141] Hankins and Silverman, *Instruments And The Imagination*, 66. The photographic lantern-slide, known initially as 'hyalotypes', was first invented in 1849 by the Langenheim brothers in Philadelphia, USA.
[142] J. Tucker, The historian, the picture and the archive, *Isis* 97 (1), (March 2006), 117.

lecture economies had reached the point of specialisation. Sperling identified two major magic lantern-slide markets: those sold in large collections for public entertainments or for educational (or therapeutic) lectures and, secondly, those destined for smaller, often collective, viewings in domestic contexts.[143] This was also the zenith of the lantern industry as research suggests that it was in the 1880s and 1890s that the popularity of lecture sets declined.[144] This process accelerated at the turn of the century and factual lecture reading and lantern-slide manufacture was, as Crangle stated in his ground-breaking study of lantern-slide practices *Hybrid Texts*, over by the First World War.[145]

From academic concerns about the production of science through communication, a considerable body of theorizing has emerged around the historical use of instruments. The demonstration instrument, it is argued, displays and exhibits known phenomena to the uninitiated and, Hankins and Silverman alleged, always presented 'the phenomena to the senses'.[146] Research instruments, conversely, were used to obtain new knowledge that is then presented in written, graphic or digitized form.[147] In histories of British mid-nineteenth century scientific technologies, scholars have identified signs of remarkable changes in attitude toward science as the geographies, or the peoples and places, in which science communication was performed, shifted.

[143] J. Sperling, From magic lantern slide to digital image: visual communities and American culture, *The Journal of American Culture* 31 (1), (2008), 1.
[144] Crangle, '"Next slide please": the lantern lecture in Britain, 1890 – 1910', 39 – 47 in Abel and Altman (Eds), *The Sounds of Early Cinema*, 39.
[145] Crangle, '"Next slide please": the lantern lecture in Britain, 1890 – 1910', 39 – 47 in Abel and Altman (Eds), *The Sounds of Early Cinema*, 43.
[146] Hankins and Silverman, *Instruments And The Imagination*, 37.
[147] Hankins and Silverman, *Instruments And The Imagination*, 37.

The Victorian imagination was, in Galison's view, captivated by the 'the extremities and rarities of nature'.[148] In such a climate the exploration of extreme environments and the graphic and literary representations of subjects of nature flourished. Artists and scientists alike 'recognized a tension between the rationalizing, lawlike image of nature proffered by the natural philosophers and the irreducible, often spiritual aspect of nature presented by their contemporaries in the arts.'[149] By the second half of the nineteenth century, Britain and particularly London's, pivotal position as 'a global centre for the trade in specimens' was central to popular performances of knowledge.[150] London became a vast laboratory for examination by scientists on the one hand, and on the other, the public display and exhibition of flora and fauna from across the empire in places such as the British Museum and the Royal Botanical Gardens at Kew.[151] The natural history crazes of sea life, ferns and dinosaurs in the 1850s illustrate this change and, as Lightman observes, are indexical of widening interests in, and demographics, of knowledge.[152] The incorporation of new fields of knowledge, and the communication of these in diverse registers, was correlative to the advent of new audiences, sites, materials, technologies and spaces of knowledge production and consumption. Victorian audiences flocked to exhibitions at the Crystal Palace, gigantic panoramas, and the spectacular performances of nature depicted on

[148] P. Galison, *Image and Logic: A Material Culture of Microphysics*, Chicago University Press, Chicago, 1997, 75. See also B. Lightman, The visual theology of Victorian popularizers of science: from reverent eye to chemical retina, *Isis* 91 (4), (Dec., 2000), 651-680.
[149] Galison, *Image and Logic,* 75.
[150] Lightman, *Victorian Popularizers Of Science,* 3.
[151] Galison, *Image and Logic: A Material Culture of Microphysics*, 553-559; Lightman, *Victorian Popularizers Of Science,* 3.
[152] Lightman, *Victorian Popularizers Of Science,* 1.

grandiose scales such as those staged inside the Royal Panorama and Wylde's Great Globe.[153]

Yet the historical geographical range of the lantern transcended London. Kember, Plunkett and Sullivan have mapped some of the sites of spectacular scientific showmanship beyond British urban metropoli, particularly in the south west of Britain.[154] This process of adaptation and dissemination of knowledge to a widening demographic also occurred via visual media such as publications, photographs and lantern-slide lectures. Scientific societies and cultural institutions also participated in these practices. The use of the lantern by savant societies spawned both new geographies of knowledge and new geographical knowledges.

Fashioning science in the centrifuge and centripete of London

Despite, and perhaps because of, its long history, and as a result of its absence from influential studies of visual media, presented above, the lantern is an overlooked medium in studies of hermeneutic processes.[155] Nevertheless, the 'Golden Age'[156] of lecture demonstration was, for Taylor, located in the second half of the nineteenth century.[157] This was as a consequence of a growing public interest in science that coalesced around local sites of scientific, natural history and 'microscopical societies' in

[153] See for example E. Huhtamo, *Illusions in Motion*, MIT, 2013.
[154] Kember, Plunkett and Sullivan (Eds), *Popular Exhibitions, Science and Showmanship, 1840-1910.*
[155] At the Royal Society (RS), the tradition of lecture demonstration developed in the seventeenth century. Appointed as the RS's curator and demonstrator in 1662, Robert Hooke provided experiments for most of the Society's meetings (Taylor, *The Art and Science of Lecture Demonstration*, 2).
[156] Lorimer, Telling small stories, 197–217; Livingstone, Text, talk and testimony, 93–100; Finnegan, Exeter-Hall science and evangelical rhetoric in mid-Victorian Britain, 46-64; Finnegan, Geographies of scientific speech in mid-Victorian Edinburgh in Livingstone and Withers (Eds), *Geographies of Nineteenth-Century Science*, 153-177; Keighren, *Reading the reception of Ellen Churchill Semple's Influences of Geographic Environment (1911);* Keighren, Giving voice to geography, 198-203.
[157] Taylor, *The Art and Science of Lecture Demonstration*, 1988.

London and across Great Britain.[158] The magic lantern became integral to the regular lectures held by these societies. In London the Royal Institution was amongst the most prominent institutions to attract the minds and bodies of the 'professional classes' to its 'formal and fashionable' Friday Evening Discourses from 1826 onwards.[159]

Scholars contend that patterns of knowledge display and discovery changed over the course of the nineteenth century as knowledge came to be conceived of as science.[160] Such transformations engendered changes to the perceived function of the lantern. The use of the medium evolved in tandem with the diverging geographies of knowledge; those associated with theologically informed understandings of existence, and others formed by understandings of natural selection, evolutionary theory and secularism.[161] Regarded by many as a children's 'toy' in the first half of the century, by the 1880s the lantern became widely mobilized as a scientific and educational tool.[162] Prior to the 1860s the lantern and lantern-slides were also,

[158] I. Inkster, Introduction: aspects of the history of science culture in Britain, 1780-1850 and beyond, 1-17 and J. N. Hays, The London lecturing empire, 91–112 in I. Inkster and J. Morrell (Eds), *Metropolis and province: Science in British Culture,1780–1850*, [1983], Routledge, 2007; R. Dennis, *Cities in Modernity, Representations and Productions of Metropolitan Space, 1840 -1930*, Cambridge University Press, 2008; Naylor, The field, the museum and the lecture hall, 494-513.

[159] Taylor, *The Art and Science of Lecture Demonstration*, 3; J. Howard, 'Physics and fashion': John Tyndall and his audiences in mid-Victorian Britain, *Studies History Philosophy of Science*, 35, (2004), 729 – 758; S. Schaffer, Transport phenomena: Space and visibility in Victorian physics, *Early Popular Visual Culture*, 10 (1), (2012), 71-91.

[160] F. M. Turner, *Between Science and Religion, The Reaction to Scientific Naturalism in Late Victorian England,* Yale University Press, 1974; J. Secord, *Visions Of Science, Books and Readers at the Dawn of the Victorian Age,* Oxford University Press, 2014; G. Dawson, *Darwin, Literature and Victorian Respectability*, Cambridge University Press, [2007], 2009; B. Lightman and B. Zon (Eds), *Evolution and Victorian Culture*, Cambridge University Press, 2014; Withers, *Geography And Science In Britain, 1831-1939*.

[161] Turner, *Between Science and Religion, The Reaction to Scientific Naturalism in Late Victorian England;* Lightman and Zon (Eds), *Evolution and Victorian Culture*; G. Cantor, G. Dawson, G. Gooday, R. Noakes, S. Shuttleworth and J. R. Topham (Eds), *Science in the Nineteenth-Century Periodical*, Cambridge University Press, [2004], 2008; Dawson, G and B. Lightman (Eds), *Victorian Scientific Naturalism Community, Identity, Continuity*, University of Chicago Press, 2014.

[162] B. M. Stafford and F. Terpak, *Devices of Wonder*; T. Gunning, Hand and Eye: Excavating a New Technology of the Image in the Victorian Era, *Victorian Studies* 54 (3), (2012), 495-516.

predominantly, associated with entertainment practices in Britain.[163] To attract audiences, producers of shows and spectacles had recourse to dramatic visual effects such as those of the lantern.[164] Accordingly, scholars recently began to address the history of scientific spectacle in order to contextualize these displays within broader cultures of communication, exhibition, science and social change and for the purposes of theorizing the emergence of a hierarchical scientific canon.[165] Numerous studies observe the proliferation of geographies of the lantern across the nineteenth century. Indeed Londoners, and inhabitants of other urban centres, could choose from an array of 'diverse types of theatrical performance, dissolving view and magic lantern shows, dioramas and panoramas, exhibitions of freaks and curiosities, waxworks, and balloon ascents, as well as exhibitions of the products of the arts and sciences.'[166]

Altick's *The Shows of London* provided the foundation for many studies of nineteenth-century popular culture from which this work draws.[167] The magic lantern and other technologies of display of the late eighteenth and early nineteenth centuries became part of these popular entertainments in order, Morus argued, to make us believe what we see in science.[168] Subsequent works have produced richer, but smaller-scaled, cultural histories of the London entertainment landscape of this era. From the 1860s onwards lanterns became integral to illustrated instructive lectures across multiple London institutions in which performances of cultural and

[163] Kember, *Marketing Modernity,* 61.
[164] Daunton (Ed), *The Organisation of Knowledge in Victorian Britain,* 3.
[165] Morus, Seeing and believing science, 102.
[166] R. Altick, *The Shows of London,* Harvard Univ. Press, 1978; Morus, Seeing and believing science, 109; Kember, *Marketing Modernity*.
[167] Altick, *The Shows of London*; Withers, *Geography And Science In Britain, 1831-1939*.
[168] Morus, Seeing and believing science, 102.

scientific entertainments co-mingled.[169] Arguably, most famous amongst these popular commercial shows were the lantern phantasmagoria, such as the Pepper's Ghost performances, at the London Royal Polytechnical Institute (RPI).[170] Brooker has traced the development and the rise, fall and subsequent revival of this institution's fortunes in relation to the visual technological innovations such as photography by Fox Talbot, the use of lanterns for dramatic effects in lecture demonstrations, and the incipient use of moving film by the Lumière brothers from 1898 onwards.[171] It is then against the background of entertainments outlined above that the chapters below assess some examples of lantern use by scientists and explorers connected to the RGS prior to the Society's uptake of the medium in 1886.

Scholarly attention is shifting towards the connections between earlier traditions of textual narratives in popular illustrated journals and those of lantern lecture performances.[172] Historians of science have deepened the temporal scope of lantern studies via their concern with the related histories of popular science exhibitions and phantasmagoric displays dating from the seventeenth century to the nineteenth century. Amongst these During's tracing of the lineage of the Renaissance magic

[169] Kember, *Marketing Modernity,* 61.
[170] L. Mannoni, W. Nekes, M. Warner, *Eyes, Lies & Illusions, The Art of Deception*, Hayward Gallery Publishing, 2004, 13-14 and 20; L. Smith, Entertainment and amusement, education and instruction: lectures at the Royal Polytechnic Institution in Crangle, Heard and van Dooren (Eds), *Realms of Light,* 138-145; J. Brooker, Paganini's ghost: musical resources of the Royal Polytechnic Institution (1838-1881) in Crangle, Heard and van Dooren (Eds), *Realms of Light,* 146-154; B. Weeden, *The Education Of The Eye: History Of The Royal Polytechnical Institution 1838-1881,* U.K. Granta Editions, 2008, 71-86; Kember, *Marketing Modernity,* 44-84; J. Brooker, *The Temple of Minerva Magic and the Magic Lantern at the Royal Polytechnical Institution, London 1837-1901*, The Magic Lantern Society, 2013.
[171] Brooker, Paganini's ghost: musical resources of the Royal Polytechnic Institution (1838-1881) in Crangle, Heard and van Dooren (Eds), *Realms of Light,* 146-154; Brooker, *The Temple of Minerva.*
[172] R. Crangle, *Hybrid Texts: modes of representation in the early moving picture and related media in Britain*, University of Exeter. PhD., 1996; Kember, *Marketing Modernity*; Popple, 'Fresh from the Front': performance, war news and popular culture during the Boer War, 401–418.

show, and its connection to the popular entertainments such as the 'phantasmagoria' of the nineteenth century stands out. Such shows, in his view, perpetuated early ideas of natural magic and 'vitalist theories of nature', mediated via technologies such as the lantern, into nineteenth-century popular rational entertainments in European theatres where 'such secular magicians offered stage magic in the guise of "natural philosophers"'.[173] His study exemplifies how a social history of a specific technology undermines the binary opposition of the popular and the scientific. Warner's study of mediations of phantasmagoria pertains to this. Her sweeping study related visual renderings of phantasmagoria such as the staging of Pepper's Ghost lantern shows at the RPI to literary inscriptions of phantasmagoria. Her work was important in highlighting the 'dynamic between seer and seen' and the role of the perceiving subject's imagination in the creation, and sustaining of, this genre from the eighteenth century to the early twentieth century.[174]

Lantern studies thus query Daunton's assertion that two distinct but overlapping processes occurred across the nineteenth century: 'the generation of new knowledge and dissemination by new media'. [175] Throughout the century, knowledge or 'paradigms of what was and what was not to count as worth knowing', Daunton stressed, were contested and shaped by 'shifts in who did the defining, by what means, and with what criteria'.[176] Below I show that the logic of distinct, but contingent knowledge-making processes, and the teleological sequence of knowledge production

[173] F. Nadis, Review of Simon During's *Modern Enchantments: The Cultural Power of Secular Magic*, 2002 in *Technology and Culture* 45 (4), (October 2004), 896.
[174] M. Warner, *Phantasmagoria: Spirit Visions, Metaphors, and Media into the Twenty-first Century*, Oxford University Press, 2006, 14.
[175] Daunton (Ed), *The Organisation of Knowledge in Victorian Britain,* 5.
[176] M. Bentley, The evolution and dissemination of historical knowledge in M. Daunton (Ed.), *The Organisation of Knowledge in Victorian Britain*, Oxford University Press, 2005, 174-5 quoted in Daunton (Ed), *The Organisation of Knowledge in Victorian Britain,* 1.

followed by knowledge dissemination via media does not hold; instead human interactions with media generated knowledge. Yet the concept of science and the value of a notionally popular science have been much debated by historians.[177] In the wake of the publication of *Scientific Revolution* in which 'a pluralist sensibility towards nature' was demonstrated numerous social histories of scientific culture sprang up.[178] *Leviathan and Air Pump* continues to reverberate throughout historical enquiries. In the wake of its publication the social constructivist nature of science through dialogue, discussion and trust became currency within histories of science and technology.[179] Historical geographical perspectives further dissected such studies via detailed spatial analysis.[180] Here I argue for the discursive social construction of geographical knowledge and its methods, around the display of images in the geographical projections space. From the early 1980s Bennett argued for mutualism in knowledge-making, stating that 'popular culture should be seen neither as imposed hegemonically from above nor welling up from below, but as an area of exchange between classes.'[181] Cooter and Pumfrey also rejected the conception of science as

[177] Daunton (Ed), *The Organisation of Knowledge in Victorian Britain*; B. Bensaude-Vincent, A Historical Perspective on Science and Its "Others", *Isis* 100 (2), (June 2009), 359.
[178] I. Inkster and J. Morrell (Eds), *Metropolis and Province: Science in British Culture, 1780-1850, Routledge, [1983], 2007 (accessed online at the British Library, www.blu.uk* 01/02/2016); T. Bennett, 'Popular Culture: defining our terms' in Block 1 of the Open University course U 203 book, *Popular Culture: Themes and Issues* 1, Milton Keynes 1981 in J. M. MacKenzie, *Imperialism and popular culture*, Manchester University Press, 1986.
[179] T. Kuhn, *The Structure of Scientific Revolutions, The Structure of Scientific Revolutions*, The University of Chicago Press, [1960] 2012; Shapin and Schaffer, *Leviathan and Air Pump,* Hobbes, Boyle, and the experimental life, Princeton University Press, [1985], 2011; Shapin, Placing the view from nowhere: historical and sociological problems in the location of science, 5-12.
[180] Livingstone, Text, talk and testimony: geographical reflections on scientific habits. An afterword, 93–100; Finnegan, Exeter-Hall science and evangelical rhetoric in mid-Victorian Britain, 46-64; Finnegan, Geographies of scientific speech in mid-Victorian Edinburgh in Livingstone and Withers (Eds), *Geographies of Nineteenth-Century Science*, 153-177; Keighren, Giving voice to geography, 198-203.
[181] Bennett, 'Popular Culture: defining our terms' in Block 1 of the Open University course U 203 book, *Popular Culture: Themes and Issues* 1, 86 in J. M. MacKenzie, *Imperialism and popular culture*, 13; Inkster and Morrell (Eds), *Metropolis and Province (accessed online at*

popular since it implied an artificial distinction between science and its reception by a range of passive audiences.[182] A unilateral diffusionist model of nineteenth-century scientific knowledge production was further challenged by a study of Tyndall's public practices and performances of scientific experiments at the RI, which demonstrated the 'symbiotic relationship' between producers and consumers, the 'co-stars' of popular science.[183] Meanwhile whilst conceding the active participation of audiences at soirées, Alberti emphasized the role of such events in the mutual-construction of scientific knowledge and middle class social practices.[184] That study was useful in allowing visual media such as the 'oxy-hydrogen lantern' to be situated within distinct media assemblages, and in particular social settings that saw both considerable variation and similarities from region to region.[185] Accordingly, a further reframing of scientific knowledge, so as to make both social and popular aspects of knowledge central to the production of science, followed Secord's study of the mobilities of knowledge.[186] Secord suggested that one of the issues in understanding popular science was a linguistic one. A solution could be provided by conceiving of science histories, practices and purposes in new terms.[187] 'Communication,' Secord proposed, should become the dominant paradigm of science. Science then is now considered by historians as 'a form of communicative action' manifest across a range of materialities and actively,

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the British Library, www.blu.uk 01/02/2016).

[182] R. Cooter and S. Pumfrey, Separate spheres and public places: reflections on the history of science popularization and science in popular culture, *History of Science* 32, (1994), 237–267.

[183] Howard, 'Physics and fashion', 729. The 'co-stars' reference comes from page 755 of the same article.

[184] S. Alberti, Conversaziones and the experience of Science in Victorian England, *Journal of Victorian Culture,* 8:2 (2003), 208-230.

[185] Alberti, Conversaziones and the experience of Science in Victorian England, 208.

[186] Secord, Knowledge in transit, 654 -72.

[187] Secord, Knowledge in transit, 654–72.

and mutually, engendered by a range of human and non-human participants, including scientific instruments.[188] It is understood as a process of shared exchange, of equal participation in common experience, though not in the construction of shared meaning. The reciprocal construction of science by its manifold performers and publics is thus acknowledged.[189] Science, in its popular forms, is conceived as socially constructed and, moreover, the notion of a 'lay public' has been reassessed as a construct emerging from specific historical traditions of science.[190] Consequently, Bensaude-Vincent called for historical inquiries into 'the mechanisms of demarcation and discrimination between science and rival forms of knowledge.'[191] Her concern was thus structural, if not spatial. Within this context of participatory histories the geographical practices of technologies of science such as the lantern and the force exerted by technoscience and its communication in the public sphere have come to the fore of histories of science.[192]

In view of the above it is important to acknowledge that the term 'observation' is not only associated with visual practices, but also concerns the offering up of verbal expressions of judgment. So what Livingstone termed the conjunction of 'location and locution' in the fashioning of knowledge also relates to practices of visual observation. Daston and

[188] Shapin and Schaffer, *Leviathan and Air-Pump*; Hankins and Silverman, *Instruments And The Imagination*; J. Topham, Rethinking the history of science popularization/popular science, 1-20 in F. Papanelopoulou, A. Nieto-Galan and E. Perdiguero (Eds), Popularizing science and technology in the European periphery, 1800-2000, 2009; C. W. J. Withers, Science, scientific instruments and questions of method in nineteenth-century British geography, *Transactions of the Institute of British Geographers* 38 (1), (2013), 167–179.
[189] Bensaude-Vincent, *A Historical Perspective on Science and Its "Others"*, 359.
[190] Shapin and Schaffer, *Leviathan and Air-Pump.*
[191] Bensaude-Vincent, A historical perspective on science and its "others," 359.
[192] Hankins and Silverman, *Instruments And The Imagination*; J. Sperling, From Magic Lantern Slide to Digital Image, 2.; Bensaude-Vincent, A historical perspective on science and its "others", 359; Withers, Science, scientific instruments and questions of method in nineteenth-century, 167–179.

Lunbeck's assertion that 'observation has always been a form of knowledge that straddled the boundary between art and science, high and low science, elite and popular practices' is particularly apposite to my study of the RGS lantern-slide lecture performances, sites of 'interstice', where visual and verbal processes of geographical knowledge communication circulated, converged and emerged in more extensive historical geographies of knowledge making. [193] Observation pertains to visual as much as to verbal processes of knowledge making. This distinction is absent in Daston and Lunbeck's assemblage of concepts of observation; the visual and verbal aspects of lantern-slide lectures discussed below, transcend the posited boundaries between knowledge forms. Moreover, visual and verbal aspects of lantern-slide lectures are seen to operate symbiotically.

Communication has, however, been further deconstructed and is understood to involve constituent, and overlapping, producers and consumers, groups which have been assigned varying levels of activity and participation in knowledge making. It is in this context that the theme of reception has taken root and seen an inter-disciplinary florescence. This has been foregrounded and accessed through studies of historical materials and their contingent practices. The greater part of scholarly attention has been devoted to studies of the reception of texts.[194] Even studies claiming a concern with geographies of rhetoric have been defined in terms of textual reception rather than of long-standing focus on this area in visual media

[193] Daston and Lunbeck, *Histories of Scientific Observation*. See also Steven Jay Gould's chapter No science without fancy, no art without facts: the lepidoptery of Vladimir Nabokov, in S. J. Gould, *I Have Landed, The End of A Beginning in Natural History*, Harmony Books, 2002, 29-53.

[194] J. Secord, *Victorian Sensation: The Extraordinary Publication, Reception and Secret Authorship of Vestiges of Vestiges of the Natural History of Creation,* University of Chicago Press, 2000; Keighren, *Reading the reception of Ellen Churchill Semple's Influences of geographic environment (1911).*

studies.[195] Such histories largely ignore the place and influence of visual media and materials in knowledge making and do not account for the influence of visual media on the scale of lecture structure and content, location, audience composition and reception. Consequently, historical geographers have occupied the gaps between studies of the reception of textual, rhetorical and visual knowledge. Notable examples are Keighren's study of Ellen Churchill Semple's lectures and Withers and Higgitt's discussion of the nineteenth-century BAAS lectures.[196]

Significant studies have been conducted on the scale of the discursive sites of visual media reception such as that of atlases, photographic albums and to a lesser extent lantern-slide shows.[197] There thus remains much scope for scrutinizing processes of reception from a number of explicit spatial perspectives, and in light of academic discourses, in order to map the circulation, content and impact of knowledge across multiple forms of inscription and transformations to knowledge via communication and travel. Visual anthropologists Lutz and Collins investigated the production process of the *National Geographic* magazine*,* by tracing both images and texts from the field to the audiences. The authors discuss representations of non-Western peoples, race, gender, privilege, progress and modernity through an analysis of the way such things as colour, pose, composition and

[195] Livingstone, Text, talk and testimony; Finnegan, D. A., Exeter-Hall science and evangelical rhetoric in mid-Victorian Britain, *Journal of Victorian Culture* 16 (1), (2011), 46-64; Finnegan, Geographies of scientific speech in mid-Victorian Edinburgh in (Eds). Livingstone and Withers (Eds), *Geographies of Nineteenth-Century Science*, 153-177; Keighren, *Reading the reception of Ellen Churchill Semple's Influences of geographic environment (1911)*; Naylor, The field, the museum and the lecture hall, 494-513.

[196] Keighren, Giving voice to geography, 198-203; Withers, Finnegan, and Higgitt, Geography's other Histories?, 433-451.

[197] Krauss, *The orginality of the avant-guard and other modernist myths*; Daston and Galison, "the image of objectivity." *Representations* 40 (Fall 1992), 81–128; Daston and P. Galison (Ed), *Objectivity*; Edwards, *The Camera as Historian Amateur Photographers And Historical Imagination, 1885 – 1918*; Sperling, From Magic Lantern Slide to Digital Image, 1-6.

perspective appear in images. The novelty of their analysis was its spatiality in that they positioned themselves at a distance from the iconography and materiality of the image so as to widen the spatial definition of an image and consider it in relation to a wider social and temporal assemblage. This pluralized the social assemblage around images. They also adopted a number of perspectives around, not just distances from, an image by conceiving of magazine photographs not simply as a captured view by an othering gaze, but as a dynamic site at which multiple gazes and potential interpretations coalesce. This construct of the image as one of intersections created a complex and multi-dimensional object.[198] Although objectifying in a number of ways the study was undoubtedly useful in its embrace of the plurality of scales, perspectives, media and gazes involved in knowledge making. The recognition that images are defined and imbued with meaning via the layering of multiple gazes pertains to this study. However, the distinctness of the multiple gazes they theorized is, perhaps, a false, or overly-theoretical, one. In practice each gaze can be understood to, at least partially, mould and remediate the other. Moreover, they each telescope into one another. Finally, in spite of its apparent scope their typology remained located in a position informed by concerns of Western academic anthropologists. Their model remained generalized and neglected the particularities of different spatial contexts within which alternative gaze assemblages are found.

In light of the above this thesis also descends from studies of diverse media by Daston and Galison, Tucker and Langford.[199] These scholars

[198] C. Lutz and J. Collins, The Photograph as an Intersection of Gazes: The example of National Geographic in L. Wells (Ed), *The Photography Reader*, Routledge, 2003, 354-374.
[199] L. Daston, and P. Galison, "The image of objectivity" *Representations* 40 (Fall 1992) in J. Tucker, Objectivity, Collective Sight, and Scientific Personae, *Victorian Studies*, Volume

assert that 'observation is not the purview of an individual scientist, laboratory, or discipline alone; it is […] always an outcome of collectively learned ways of seeing'.[200] Daston and Galison argue that atlases display an 'exemplary form of collective empiricism' and suggest that they depend on and enable all kinds of collaborations via which knowledge is produced collectively, materially, sensuously and discursively.[201] Studies of the collective production of knowledge and the agency of material objects are particularly apposite in the context of what were simultaneously individual and collective experiences of RGS lecture and post-lecture discussions amongst the RGS Fellowship.[202]

As this thesis concerns the gazes and observations of a number of historical actors, histories of popularization or professionalization of science in the nineteenth century pertain to it. In his discussion of the space of the 1890 Stanley and Africa exhibition Driver concluded that the claims of science, commerce, missionary propaganda and popular entertainment 'jostled awkwardly'.[203] Ryan also alluded to processes of popularization in order to argue for the 'revolutionary' impact of photography at the RGS and in relation to the public display of photographs in collective performances such as lantern-slide shows.[204] Yet his conceptualization of the popular was largely abstract and lacked definition. Meanwhile Withers and Naylor, respectively, sought to overcome the narrow binaries of notionally opposing popular and scientific spheres by elucidating how these multiple, contingent,

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50/No. 4, 2008, 656; Langford, *Suspended Conversations: The Afterlife of Memory in Photographic Albums*.

[200] Tucker, Objectivity, collective sight, and scientific personae, 656.

[201] Tucker Objectivity, collective sight, and scientific personae, 656.

[202] L. Daston, and P. Galison, "The image of objectivity" *Representations* 40 (Fall 1992) in J. Tucker, Objectivity, Collective Sight, and Scientific Personae, *Victorian Studies*, Volume 50/No. 4, 2008, 656; Langford, *Suspended Conversations: The Afterlife of Memory in Photographic Albums*.

[203] Driver, Geography Militant, 151-167.

[204] Ryan, Photography, visual revolutions and Victorian geography.

fluid and frequently overlapping phenomena shaped the geographies of scientific practice. In doing so they affirmed the geographical-specificity of the popular and scientific spheres across diverse knowledge-making settings such as BAAS meetings and regional scientific societies.[205] Withers et al. underscored the mutual-constitution of popular, professional and scientific knowledge making practices in the case of nineteenth-century BAAS meetings.[206]

Here the work of historians of science who have brought useful precision and definition to understandings of nineteenth-century audiences and knowledge making is apposite. Amongst lantern studies, Lachapelle's exposition of phantasmagoric performances of physics in late-eighteenth-century and early-nineteenth-century Paris is exemplary. For her the convergence of the 'mundane and the marvellous' in such performances blurred boundaries. [207] The ambivalent, 'permeable and changing' categories of art and science resulted in the perpetuation of the magic and the occult in nineteenth-century Paris.[208]

I have therefore debated the definitions of various potential terms used to describe and discuss the historical geographies of what Lightman called 'practitioners of science' and 'popularizers of science' and 'would-be professionalizers of science'.[209] Lightman, perceptively, avoided the term 'professional scientist' since it is freighted with implications of a process that was complete in the second half of the century, and thus has connotations,

[205] Naylor, The field, the museum and the lecture hall, 494-513; Withers, *Geography And Science In Britain, 1831-1939*.
[206] Withers, Finnegan and Higgitt, Geography's other histories?, 433-451.
[207] Mannoni, *The Great Art of Light And Shadow,* 136-175; S. Lachapelle, Science on stage: amusing physics and scientific wonder at the nineteenth-century French theatre, *History of Science*, (2009), 298.
[208] Lachapelle, Science on stage, 297-315.
[209] Lightman, *Victorian Popularizers Of Science,* 10-13.

in the case of the RGS and geography, that would be misleading.[210] The term 'practitioner of science' is apt here since it helps to distinguish 'between those who engaged in conducting experiments or analyzing the natural world and popularizers whose activities were mainly focused on writing about nature'.[211] Secord, however, opted for the term 'commercial science' due to its ability to convey how science in early nineteenth-century Britain became part of the commercial culture of exhibition. There was, he argued, a 'revolution in communication' that included the knowledge display in prose journals, panoramas and museums, which constituted opportunities for financial profit.[212] Secord also discerned that the term 'popular science' came to be seen as pejorative as, he argued, 'it stabilized in the late nineteenth and early twentieth centuries' and 'was designed to render readers as invisible members of a mass audience'.[213] However, the term 'commercial science' is not suited to this study of RGS lantern-slides and their use by multiple social constituencies since, as Lightman observed, 'it is not broad enough to include some of the figures … who became popularizers out of a sense of a religious calling, and it is too broad as it includes those who made money out of instrument making, museum curating, and showmanship'.[214] Here I am in agreement with Topham; the term 'popular science' has been seriously discredited.[215] Consequently, I have attempted to refrain from conceiving in terms of the universalized, narrowly over-determined dichotomy of 'popular' and 'professional' or 'scientific'.

[210] Lightman, *Victorian Popularizers Of Science,* 12-13.
[211] Lightman, *Victorian Popularizers Of Science,* 13.
[212] Secord, *Victorian Sensation*, 437.
[213] Secord, *Victorian Sensation,* 524-25 in Lightman, *Victorian Popularizers Of Science,* 10.
[214] Lightman, *Victorian Popularizers Of Science,* 10.
[215] Topham, Rethinking the history of science popularization/popular science in Papanelopoulou, Nieto-Galan and Perdiguero (Eds), Popularizing science and technology in the European periphery, 1800-2000, 1-20.

My thesis concerns an era when geography was in a phase of professionalization and academic institutionalization at a time when the RGS was an important standard setter, seat of instruction and learning, and authorizer of what constituted legitimate practices, content and producers of geographical knowledge. This paradigm of knowledge production as practices of communication adapted to age, gender and transnational demographics helpfully reconceptualizes notions of 'popular science' and enables a greater diversity of sources to be drawn from.[216] Over the course of the period considered in the chapters below academic settings increasingly became repositories of authority and truth-making as the geographies of geography shifted. Consequently, I seek to test and, perhaps, refine, definitions of popular and scientific. I do so by considering the historical-geographical dynamics of lantern-slides as a visual material that was mobilized across diverse RGS spaces and for the purposes of knowledge communication in a range of lectures for a diversifying community. The term 'popular' is thus employed in relation to Lightman's terms 'popularizers of science,' 'would-be professionalizers of science' and 'practitioners of science'.[217]

In a geographical light

The longevity and multiple functions of the magic lantern, outlined above, and the technology's mobility and transnational identity befuddle attempts to define it. Contradictions arise in doing so. The lantern is sometimes taken

[216] Topham, Rethinking the history of science popularization/popular science in Papanelopoulou, Nieto-Galan and Perdiguero (Eds), Popularizing science and technology in the European periphery, 1800-2000, 1-20.
[217] Lightman, *Victorian Popularizers Of Science,* 9-13.

as a defunct ancestor of moving film.[218] Yet, the significance of the lantern in the longer history of moving images remains un-, or under, represented in several disciplines. Here historical geographers' attention to these phenomena stands out. As I show here, in this broader view, the lantern continued to be employed as an instrument in demonstration lectures and as a curiosum provoking wonder.[219]

The scope of lantern-slide investigations has been widened and harnessed to support and critique constructed visual and cultural modernities. Crary's *Techniques* has resonated across visual studies.[220] Conceived as a prelude to discussions of Foucault and Debord in its analysis of visual technologies of the spectacle such as the camera obscura and the stereoscope, and the practices of observation associated with them, *Techniques* highlighted coercive strategies of control in viewing practices of visual media.[221] The work was, nevertheless, somewhat myopic in its narrow range, and depth of analysis, of visual technologies and those who interacted with them differently across diverse localities. A notable blind-spot was the omission to extensively engage with the role of the lantern in nineteenth-century culture and in specific geographies of performativity. Moreover, as Armstrong noted, Crary's conceptual framework was overly reliant on a Foucaultian carceral theory of subjugation and failed to account for the dialogical processes of negotiation that occur across a spectrum of scales of seeing and from multiple

[218] K. Vermeir, *The magic of the magic lantern (1660–1700): on analogical demonstration and the visualization of the invisible*, *BJHS* 38 (2), (June 2005), 128.
[219] Vermeir, *The magic of the magic lantern (1660–1700),* 127–159.
[220] J. Crary, *Techniques of The Observer: On Vision And Modernity In The Nineteenth Century*, MIT Press, 1991.
[221] M. Foucault, *Discipline and Punish*, 1975 and G. Debord, *The Society of The Spectacle*, [1967], English translation Black & Red, 1983.

perspectives.[222] Nevertheless *Techniques* offered an innovative challenge to the supremacy of the camera as a nineteenth century vector of change. Instead of photography, MacDonald understood Crary's affirmation of 'a set of intellectual, artistic and sensory changes' as precipitating modernity.[223] Crary embraced the vision of ongoing multiple moments rather than a singularity of modernity from the seventeenth century onwards. *Techniques* also rejected the notion that a nineteenth-century aesthetic modernity arose in the 1870s with the emergence of modernist art. Instead he argued that the untethering of the artistic eye from the architectural anchor of the camera obscura in the 1840s was crucial. Earlier technologies such as the camera obscura, Crary argued, crystalized 'stable and fixed relations'.[224] Between 1810 and 1840 these relations crumbled in the light of, and via the gaining of ground by, analogous ways of thinking and seeing of scientific practices. This marked a transition towards 'a new valuation of visual experience through science and philosophy that was ''abstracted from any founding site or referent"', that he connected with the innovation of the stereoscope.[225] *Techniques* was innovative in considering the visual and existential modernities of a clutch of artists and experimental scientists who interacted with optical devices. Yet the power of these individuals to exemplify wider nineteenth-century experiences of transformations to vision is questionable. However, a notable contribution was an affirmation of the visceral corporeal nature of knowing through vision by negotiating issues of

[222] I. Armstrong, *Victorian Glassworlds: Glass Culture And The Imagination 1830-1880*, Oxford University Press, 2008, 256.
[223] F. MacDonald, Technician of Light Patrick Geddes and the optic of geography in S. Daniels, D. DeLyser, N. Entrikin, D. Richardson (Eds), *Envisioning Landscapes*, *Making Worlds Geography and the Humanities,* 2011, 274.
[224] MacDonald, Technician of Light, 274.
[225] Crary, *Techniques of The Observer,* 14.

proximity and distance.[226]

The conjunction of the greater mobility of images with intellectual, artistic and sensory changes ushered in nineteenth-century modernity in Crary's analysis.[227] The mechanization of vision is a beguilingly tempting analysis, a mere disenchanting illusion. I do not hold with Crary's view that a fixed, mechanistically-determined perspective has ever existed; nor that any human eyes have ever been wholly appended to any single optical instrument. Such reasoning omits to give sufficient credence to geographical factors. It also denies human subjectivity, the capacity for mutualism, empathy and ability to imagine another's perspective. It also overlooks self-determination. As MacDonald noted, it also negates the specificities of the historical geographical mobilization of multiple technologies, including that of the lantern.[228]

The movement engendered by such technologies produces the effect of parallax and the need to attempt the reconciliation of, or to recognize, perspectival plurality. Crary takes parallax as 'binocular disparity … bound up in the physiological question of human vision, and a monocular device precludes having to theoretically reconcile these dissonant, and thus provisional, images presented to each eye.'[229] The instance of parallax, such as that involved in the process of human vision in which the optical nerve, the chiasma, creates a single image out of two inverted images produced by each eye, is employed in the chapters below. I apply the term to a range of scales, between media, as well as throughout the life course of a single individual and between individuals, and in relation to different

[226] MacDonald, Technician of Light, 274.
[227] MacDonald, Technician of Light, 274.
[228] MacDonald, Technician of Light, 274.
[229] Crary, *Techniques Of The Observer,* 48-49.

concepts.[230] I do so in response to Latour's projection of studies that would define processes of knowledge mediation and account for the ways in which 'mediators are telescoped, unfolded, embedded into one another.'[231] In seeking to achieve this, Latour argued that 'We have to hold the two eye pieces together so that we turn it into a real *bi*nocular; it takes time to focus, but the spectacle, I hope, is worth the waiting.'[232] More recently, in deconstructing iconic compositions, and their itended effects, iconologist Fr. Maximos Constas has also drawn upon the process of parallax to describe processes of human perception.[233]

Lantern illusions constitute a core research theme.[234] There was a long tradition of dramatic lantern presentations that presented world views of 'a Christian science by adaptation to the cultural milieu'.[235] Koen Vermeir reasoned that it was not until the nineteenth century that the lantern projected 'truth' such as that of religious propaganda.[236] In synthesizing philosophy and history with religious studies, Bailey provided a social critique of the history of lantern technology.[237] He developed a thesis that 'our worldview with its hidden enchantments and enshrinement of reason is pathological' and argued that disenchantment ensued from the scientific and industrial revolutions.[238] However, he inverted this view to argue that the world was not disenchanted, but rather that 'enchantment' was

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[230] N. Thomas and D. Losche (Eds), *Double Vision Art Histories and Colonial Histories in the Pacific,* Cambridge University Press, 1999.
[231] B. Latour, How to be iconophilic in art, science and religion? In C. A. Jones and P. Galison (Eds), *Picturing Science Producing Art*, Routledge, 1998, 424.
[232] Latour, *Visualisation and cognition,* 5.
[233] Fr, Maximos Constas, *The Art of Seeing, Paradox and Perception in Orthodox Iconography*, Sebastian Press, 2014; 50-51, 64-68.
[234] Mannoni, Nekes, Warner, *Eyes, Lies & Illusions, The Art of Deception*, 14.
[235] Mannoni, Nekes, Warner, *Eyes, Lies & Illusions, The Art of Deception*, 19; K. Vermeir, *The magic of the magic lantern (1660–1700)*, 158.
[236] Vermeir, *The magic of the magic lantern (1660–1700),* 158.
[237] F. Nadis, Review of Bailey's *The Enchantments of Technology* (2005), October 2006, 817.
[238] Nadis, Review of Bailey's *The Enchantments of Technology*, 817.

transferred from direct experiences of the wonders of natural phenomena to virtual and technologically-mediated experiences of nature.[239]

Similarly, the camera, stereoscope and lantern were, for During, the focus of much criticism from a nineteenth-century cultural elite.[240] A Spinozist premise, During reasoned, was the foundation of these criticisms regarding the use of the lantern 'to foster illusions, inflame the imagination, or stupefy,' as this visual technology, that was by then centuries-old, was repurposed for the promotion of idealistic and moralistic propagandizing, notably by missionaries for the revelation of the presence of the divine in nature.[241]

For Bailey the modern world was 'laden with hidden "enchantments," unstated desires, fantasies, and myths that guide technological development, research, and commerce.'[242] He argued that modernity was characterized by cognitive detachment and, as one reviewer stated, that the 'scientific worldview required a new "disenchanted" metaphysic'.[243] For Bailey then, and according to Nadis, the Descartian dualism of the separated body and mind 'heightened alienation and encouraged, in compensation, a nihilistic will to power often channeled through technology'.[244] Historical geographers have grounds on which to challenge such universalizing views regarding the relationship between technology and subjectivity. Bailey and Vermeir's insights into the imbrication of religion, science and enchantment, and technologically-mediated and embodied knowledge making recur in this thesis. They inform the RGS's

[239] Nadis, Review of Bailey's *The Enchantments of Technology*, 816.
[240] Nadis, Review of S. During, 'Modern Enchantments: The Cultural Power of Secular Magic' in *Technology and Culture* 45 (4), (October 2004), 896.
[241] Nadis, Review of Simon During, *Modern Enchantments,* 896.
[242] Nadis, Review of Bailey's *The Enchantments of Technology*, 816.
[243] Nadis, Review of Bailey's *The Enchantments of Technology*, 816.
[244] Nadis, Review of Bailey's The Enchantments of Technology, 816.

reception of the lantern and resistance to it, the perceived effects of lantern-slides and the influence of these on knowledge making.

In following the historical paths of the lantern, the absence of the medium in numerous studies of light is discernable. Light, argued Zajonc 'gathered around it innumerable artistic and religious associations of extraordinary beauty'.[245] Physicists, he stated, religious thinkers, artists and technicians harnessed light to diverse, but entangled, ends; scientific, symbolic, practical.[246] Zajonc attends to both the transformations to the ideations of light and the human conscious entwined around these in this vast work that takes in the telescope and camera obscura, yet not the lantern.[247] The 'unweaving of the rainbow,' he stated, preoccupied thinkers, poets, artists and natural theologians in the nineteenth century.[248] John Stuart Mill, 'maintained staunchly that the love of natural beauty was no obstacle to scientific knowledge.'[249] To others, however, science was cause for alarm; theoretical and scientific knowledge, in its lifting of the 'veil of Isis', slayed the sublime.[250] For example, the American poet David Thoreau questioned, in 1851, 'What sort of science is that which enriches the understanding, but robs the imagination? If we really knew things thus mechanically merely, should we know anything really?' [251] For the transcendentalist Thoreau the artificial, human-manufactured, light might threaten the numinous light of the imagination. Additional dimensions of

[245] A. Zajonc, *Catching The Light The Entwined History of Light and Mind*, Oxford University Press, 1993, 8.
[246] Zajonc, *Catching The Light The Entwined History of Light and Mind*, 8.
[247] Zajonc, *Catching The Light The Entwined History of Light and Mind*, 8.
[248] John Keats in Zajonc, *Catching The Light The Entwined History of Light and Mind*, 159.
[249] Zajonc, *Catching The Light The Entwined History of Light and Mind*, 158.
[250] Sir R. F. Burton (translated by) *The Kasîdah of Haji Abou El-Yezdi*, The Octagon Press, 1974, 25.
[251] H. D. Thoreau, *The Journals of Henry D. Thoreau*, ed. Francis H. Allen and Bradford Torrey (Houghton Mifflin Co., 1906), vol. III, 155-56 in Zajonc, *Catching The Light The Entwined History of Light and Mind*, 158.

nineteenth-century perceptions of glass and light come from Otter's attention to the 'physiology, sociology and spatiality' of changing light technologies.[252] Included in the analysis were the candle, the carbon arc lamp and electricity.[253] This work is spatially sensitive in its tracing landscapes of light, great and small, across public arenas of panopticons, theatres, street lamps, traffic lights, glasshouses, government, hospitals, houses, libraries and lighthouses. Otter also integrates cameras and spectroscopes into his scrutiny of 'patterns of perception' across these interlocking spheres.[254] Here I contribute a historical and geographically-particular understanding to the effects of light since Otter discussed the scientific and cultural institutional setting of the RI, but excluded the RGS and other major London institutions where knowledge was fashioned and their role in 'empiricist-realist mode of attentive world reading'.[255] Nor did he explore the realm of the lantern.[256]

Related to the above studies of light is Schaffer's elucidation of 'image machines' employed as investigative tools in laboratories and the public exhibition of scientific phenomena in late nineteenth-century London.[257] His study connects the visual practices of physics to some of that discipline's metropolitan institutional sites.[258] By transposing and re-scaling the classical physics term 'transport phenomena' Schaffer took up the concepts of energy flow and exchange to demonstrate how physics was rendered visible by harnessing technologies of visibility, and was thereby

[252] C. Otter, *The Victorian Eye A Political History of Light and Vision in Britain,* 1800-1910, The University of Chicago Press, 2008, 22-61.
[253] Otter, *The Victorian Eye*,178-80.
[254] Otter, *The Victorian Eye*, 253-263.
[255] Otter, *The Victorian Eye*, *52.*
[256] Otter, *The Victorian Eye*, *52.*
[257] Schaffer, Transport phenomena, 71.
[258] Schaffer, Transport phenomena, 71.

set in motion.[259] Foregrounding space and locality as indexical functions of 'Empiricist idioms of visibility,' Schaffer highlighted image machines' roles in attracting and disciplining audiences.[260] As such the function of technologies in knowledge making was showcased. Yet the ambiguity of such performances and the ways in which they were differently interpreted across these vicinities remain invisible. The physical spaces of physics' visual culture were barely peopled except by 'practitioners' such as John Tyndall and Charles Vernon Boys. So whilst theoretically attentive to spectatorship, as readers we never do see how historical audiences saw or looked at performances of physical sciences.[261] Audiences feature as silent witnesses and thus remain the unreached dark matter beyond the scope of the study. Nor are the transformative properties of knowledge demonstration, and the engenendering of emotional and intellectual exaltation by learned institutions, in their role as social laboratories, scrutinized.[262] Although implicit in Schaffer's study is the acknowledgement of the ongoing diffused geography of knowledge production across laboratories, lecture theatres and other sites of knowledge performance, the emphasis on physical place, rather than human spaces, in that process is restrictive. Yet, vitally, the study draws us to a threshold from whence we see the need to perform a dynamic and multi-dimensional physics, rather than static historical geography, of processes of knowledge transformation, rather than simply production in, or movement between, place. This suggests that ideas, if taken as 'transport phenomena' become knowledge, that some, in some times and places, call science, and others magic or art,

[259] Schaffer, Transport phenomena, 75.
[260] Schaffer, Transport phenomena, 76.
[261] Schaffer, Transport phenomena, 77.
[262] See also Latour, How to be iconophilic in art, science and religion in in Jones and Galison (Eds), *Picturing Science Producing Art*, 418-440.

precisely because of their transformable and transformative, practically magical, properties.[263]

Schaffer's line of reasoning extends Latour's previous call for investigations of processes of knowledge transmission by addressing how the cognitive foci are held steady.[264] In view of this the chapters below consider a paradigm of knowledge conceived of as the fluid dynamics of energy, motion and matter that transcends physics, academia and other categories so as to offer vibrant possibilities for conceiving of the mutually-constituting and -interacting scales of knowledge, across and within disciplines, and beyond, in new lights.[265] The chapters below also replicate Schaffer's concern with technologies and add new layers of meaning to the institutional history of the RI.

The matter of light has also drawn MacDonald, who located the camera obscura in Edinburgh's Outlook Tower in relation to the visualization and teaching practices of the late nineteenth-century Scottish geographer, Patrick Geddes.[266] Withers had previously suggested that the tower was 'a key instrument in promoting the powers of observation…and for extending his vision for geography and regional survey'.[267] As at the Outlook Tower, both darkness and light were harnessed to attract audiences and to represent, debate and discursively produce places and

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[263] Related to this is Latour, Visualisation and cognition, 5; C. Herbert, *Culture and Anomie: Ethnographic Imagination In The Nineteenth Century*, University of Chicago Press, 139-149; Gunning's description of visual culture as a 'field based on broad cultural and historical description of the transformation of experience' in T. Gunning Visual culture questionnaire, *October* 77 (Summer), (1996) 37-9; Golinski, *Making Natural Knowledge, 34;* T. Gunning in 'An Interview with Tom Gunning' in in M. Dikovitskaya, *Visual Culture: The Study of the Visual After The Cultural Turn*, The MIT Press, 2006, 173-192.
[264] Latour, Visualisation and cognition, 5.
[265] See also P. Galison, *Image and Logic: A Material Culture of Microphysics*, Chicago University Press, 1997, 1-7.
[266] MacDonald, Technician of Light, 269-279.
[267] Withers, *Geography, science and national identity*, 226 in MacDonald, Technician of Light.

spaces at the RGS, including those of the Society, but via the sites in which the lantern and lantern-slides were deployed. Unlike the Outlook Tower, there was a remove between referent geographical scenes and projected images. Human instruments and optical devices such as the camera mediated representations and interpretations of geographical imagery. Here the RGS lantern-slide collections and their contingent historical geographies of display and reception, enable us to picture the RGS within London's lecturing landscape. Additionally, the RGS's form of geography is situated within a wider setting of British visual science practices, as well as an international one.[268]

Chiastic spaces

Scholars have argued that in the nineteenth century the visual technologies of the camera obscura, photography and lantern mediated understandings of geography and space, the here and there, and conceptions of the human and the relationship between the two.[269] In asking 'Where materially is the geographical imagination? Where is it physically to be found?' Daniels indicated the incarnate nature of the geographical imagination within material supports, including technologies and 'the human mind, as pictures within our heads, to a place out there in the world […] forms of media and instrumentation and in physical sites, chambers for image production like

[268] Hays, 'The London lecturing empire', in Inkster, and Morrell (Eds), *Metropolis and province,* 91–112; V. R. Schwartz, and J. M. Przyblyski, Cities and the built environment, 165-166, *The Nineteenth-Century Visual Culture Reader,* Routledge, 2004; S. Gunn, *The Public Culture Of The Victorian Middle Class - Ritual and authority in the English industrial city 1840 – 1914*, Manchester University Press, 2007, 207; Naylor, Introduction: historical geographies of science, 1–12; Leveridge, 'Limelights and shadows'.

[269] J. M. Schwartz, The Geography Lesson: photographs and the construction of imaginative geographies, *Journal of Historical Geography* 22, 1, (1996), 16–45; Mannoni, Nekes, Warner, *Eyes, Lies & Illusions, The Art of Deception*, 20; E. Edwards, *The Camera as Historian Amateur Photographers And Historical Imagination, 1885 – 1918*, Duke University press, 2012; Ryan, *Picturing Empire*; Ryan, Photography, visual revolutions and Victorian geography; MacDonald, Technician of light.

studios and theatres and a less spectacular, private realm of homes and gardens, as well as geography's institutional premises like map libraries and field sites.'[270] Within and through such morphological entities the human geographical imagination is both immanent and transcendent.

Studies of the lantern have appeared sporadically in humanities disciplines including English, film and visual and media studies and geography. Lantern-slide scholarship has focused largely lantern-slides's function in knowledge communication and dissemination and the iconography of lantern-slides.[271] The scale of these studies varies from the imperial, national, regional, urban to the institutional, and many evidence the spatial range of lantern use in architectural contexts from schools, to churches and chapels, village halls, private homes, galleries, scientific institutions where lantern shows were given for an array of purposes and audiences.[272] Mannoni's epic study of pre-cinematic optical devices dating from the twelfth century to the twentieth century encompasses all these sites. Its virtue of being international in its subject matter remains nonetheless dominated by a European and North American focus, and analytical bias.[273] Short's *Magic Lantern Empire* study of the construction of colonialism in metropolitan Germany innovatively presented the changing

[270] S. Daniels, Boundary Crossings, Geographical imagination, *Transactions of the Institute of British Geographers* NS 36, 2011, 185.
[271] J. A. Secord, Knowledge in transit, *Isis* 95, (2004). 654-672; J. Ryan, Visualizing Imperial Geography: Halford Mackinder and the Colonial Office Visual Instruction Committee, 1902-11. *Ecumene* 1 (1994): 157-76; Ryan, *Picturing Empire*; J. Tucker, The historian, the picture and the archive, *Isis* 97 (1), (March 2006).
[272] D. M. Scott, The popular lecture and the creation of a public in mid-nineteenth-century America, *The Journal of American History,* 66(4), (1980), 791–809; J. Ruchatz, Travelling by slide: how the art of projection met the world of travel in Crangle, Heard and van Dooren (Eds), *Realms of Light,* 34-41; S. Herbert, A slice of lantern life: lantern presentations in and around Hastings in early 1881, in Crangle, Heard and van Dooren (Eds), *Realms of Light,* 185-93; N. McCole, The magic lantern in provincial Ireland 1896-1906, *Early Popular Visual Culture* 5 (3), (November 2007), 247-62; R. C. Leveridge, 'Limelights and shadows', 1-353; Crangle, "Next Slide Please", 39 – 47, in Abel and Altman (Eds), *The Sounds of Early Cinema*, 46.
[273] L. Mannoni, *The Great Art of Light And Shadow, Archaeology of the Cinema*, University of Exeter Press, [1995] 2000.

relations, but ultimately imbrication, of empire and the emergent nation-state of Germany through a study of lantern and other entertainment practices.[274] Elaborated on such vast temporal and historical scales these studies necessarily omit some of the finer nuances that a study of a single institution such as the present one provides. They are, nevertheless, not situated within discourses of historical geography. The synthesis of the aforementioned research with recent contributions from historical geographers who have demonstrated the importance of space on visual practices has yet to be undertaken.

Historians of visual media and historical geographers thus share common ground in considering locational particularities of images in knowledge-making practices. Koen Vermeir argued that the earliest lantern practices were multi-sited and that the medium was placed within a wider assemblage of 'collections, demonstration lectures and texts'.[275] Lantern-slide lectures commonly featured a lecturer or commentator, characterized by Crangle as 'almost invariably a man in evening dress wielding a stick to point out elements of the picture', and reading out loud the text of the 'reading pamphlet' that was perceived to augment or explain factual views and visual narrative sequences.[276] Photographic slide sets were often accompanied by a factual lecture that provided 'authoritative descriptions of the world at large'.[277] 'scientists and teachers demonstrating physiological principals,' Rossell observed, were amongst those who took up the lantern to communicate knowledge.[278] Common lecture subjects were

[274] J. P. Short, *Magic Lantern Empire, Colonialism and Society in Germany*, Ithaca, N.Y. Cornell University Press, 2012, pp. 232.
[275] Vermeir, *The magic of the magic lantern (1660–1700).*
[276] Crangle, "Next slide please", in Abel and Altman (Eds) *The Sounds of Early Cinema*, 39.
[277] Crangle "Next slide please", in Abel and Altman (Eds) *The Sounds of Early Cinema*, 42.
[278] Rossell, Demolition d'un mur, 322.

'topographical or other documentary" views' in addition to photographically reproduced maps, diagrams, and figurative portraits.[279] Much research has circumnavigated the relationship between the lantern, texts and the emergent fin-de-siècle era visual and mechanized modernities.[280] This includes studies by Daly, Popple and Kember.[281] Finally, numerous studies have focused on the mediating role, and thus the location, of the lantern in instrumental narratives.

As seen above Lévi-Strauss cast lantern-slide lectures in a negative light. Consequently, the concept of the chiasma, following Lévi-Strauss's metaphorical understanding of the term, presented by Wiseman, is helpful.[282] For Lévi-Strauss the process of both undertaking field-work and of writing ethnographies comprised different scales of chiastic journey, structured around a departure, work in the field, followed by a return. The chiasma in essence comprises an inversion in its etymological derivation from the Greek letter *chi,* or X, i.e. 'a cross'. Wiseman was concerned with the chiasma as a pattern of thought, an organising schema, a structure that determines, from behind the scenes, the form and content of a number of Lévi-Strauss's anthropological theories.[283] As well as concurring with the conceptual and aesthetic uses of the chiasma outlined above, here the rhetorical implications apply since lantern-slide lectures comprised verbal as

[279] Crangle "Next slide please", in Abel and Altman (Eds) *The Sounds of Early Cinema*, 43; Mannoni, Nekes, Warner, *Eyes, Lies & Illusions, The Art of Deception*, 20.
[280] Crangle, Hybrid Texts.
[281] N. Daly, *Literature, Technology, Modernity 1860-2000*, Cambridge University Press, 2004; S. Popple, 'Fresh from the front': performance, war news and popular culture during the Boer War, *Early Popular Visual Culture* 8 (4), (November 2010), 401-19; Crangle, Hybrid texts, 130-132; Kember, *Marketing Modernity.*
[282] B. Wiseman, Claude Lévi-Strauss, chiasmus and the ethnographic journey*, Arachnofiles: A Journal of European Languages and Cultures 2,* 2001, 1-12. Paper given at the University of Edinburgh Department of European Languages and Cultures, Autumn 2000 Burn Conference: http://www.ed.ac.uk/literatures-languages-cultures/delc/arachnofiles/index-issues.
[283] B. Wiseman. *Lévi-Strauss, Anthropology and Aesthetics*, Cambridge University Press, [2007], 2009.

well as visual performances. The lightspace of geographical projections also sees a visual chiasma between the lantern and the audiences who viewed lantern projections.

Conceptually related to the chiasma are literary and cultural studies that have borrowed the concept of liminality from studies of rites of passage where the term was used to denote the transition between times, spaces, practices or statuses. There the term was applied to both human and non-human entities whose assigned and self-assigning identities were in a phase of transition. Subsequently, the term has been extended to studies of texts, visual materials and general social processes.[284] Crangle perceptively offered the concept of the 'hybrid text' for understanding nineteenth-century visual and verbal lantern-slide lecture performances and their reception.[285] That pivotal work formed the basis of further lantern and film studies conceptually framed in terms of the text. In view of this, the necessary spatial and socio-techno nuances for understanding discursive aspects of the RGS's lantern-slide lectures are lacking. Additionally, the term 'hybrid', with its implications of exchange between wild and domesticated species is substantially nebulous.[286] The chiasma has the advantage of allowing us to visualize the structure of exchange processes.

The chiasma also relates to 'assemblage' thinking, a concept favoured for its flexibility in theorizing relations between, and across, diverse forms of matter and the transformations engendered to them via

[284] S. Mukherji (Ed), *Thinking on Thresholds, The Poetics of Transitive Spaces*, Anthem Press, 2013.
[285] Crangle, Hybrid texts.
[286] OED 'Hybridization' (accessed 18.02.2016) http://www.oed.com/view/Entry/89815?redirectedFrom=hybridization#eid

circulations across time and space.[287] Yet the chiasma is more temporally, spatially and conceptually flexible, as well as being adaptable to a diverse range of materials. This thesis therefore expanded the concept of the chiasma so as to render it multi-dimensional and more dynamic.

Nevertheless, liminality and hybridity also inform the function of the lantern in nineteenth-century anthropological field-work and the production of ethnologies.[288] Visual and historical anthropologists have pioneered studies of the lantern in anthropological practices, but geographers and anthropologists alike have harnessed the concept of liminality in identifying social geographies and cosmologies, as well as in the construction of ethnographies. Notable amongst these scholars was Edwards' identification of the lantern's mediating role between spheres in nineteenth-century social science fieldwork practices as they superseded those of exploration. Her study assessed Alfred Cort Haddon's deployment of the lantern in fieldwork conducted with local peoples during the 1898 Torres Straits expedition in which the lantern became instrumental in comparative studies of vision in what scholars conceive of as the open-air laboratory of the field.[289] There lantern-slides, Edwards showed, were made to perform in a chiastic gift exchange economy that brought individuals and groups together via

[287] G. Deleuze and C. Parnet, *Dialogues*, Columbia University Press, 1977; B. Latour, *Reassembling the Social: An Introduction to Actor-Network-Theory*, Oxford: Clarendon, 2005; M. DeLanda, *A New Philosophy of Society: Assemblage Theory and Social Complexity*, London and New York: Continuum, 2006; S. J. M. M. Alberti, 'Constructing nature behind glass', *Museum and Society*, Jul. 2008. 6(2), 73-97; B. Anderson, M. Kearnes, C. McFarlane, and D. Swanton, 'On assemblages and geography', *Dialogues in Human Geography*, (2012), 2 (2); B. Greenhough, 'On the agencement of the academic geographer', *Dialogues in Human Geography* 2(2), 2012, 202–206; C. Crockett, *Deleuze Beyond Badiou, Ontology, Multiplicity And Event,* Columbia University Press, 2013.

[288] E. Edwards, Making histories – The Torres Strait Expedition of 1898, *Pacific Studies* 20 (4), (December, 1997), 13-34.

[289] S. Schaffer, *From Physics to Anthropology – and back again*, Prickly Pear Press, Cambridge, 1994; E. Edwards states 'Although very much in the salvage paradigm, the systematic scientific laboratory nature of the expedition was stressed by the cutting-edge technology that was assembled […].' in Edwards, Making histories, 15.

fieldwork and therein brought about a new, common social space around the lantern.[290] As such the bodies and minds of all participants became focused around the technology and projected images. Lantern-slides became instrumental as material objects that were circulated by the expedition and offered as gifts to local collaborators. The recipients responded with food, notably coconuts, access to their persons and information, thereby creating shared social and material spaces.[291] The shared space comprises the crux of the elliptical process inherent within the chiastic rhythmic sequence. The chiasma is again useful in rendering visible the spatial structure and dynamic processes of exchange and trasnformation.

Insights from the realm of enchantment explored by Schneider, and the thrill experienced by audiences from 'being lifted out of [their] mundane existence and situated on the verge of a new understanding of our world, with the unease that derives form the assault upon [their] prior sense of how that world works – and thus upon [their] practical competence in dealing with it', have trickled through into histories of visual media and science.[292] As in the fieldwork such emotional experiences, are chiastic ones of transformation.

Travel subjects formed the focus of many historical lantern shows.[293] For historians of photography, including Schwartz photographs could serve 'as the pre-texts of travellers and as a surrogate for travel.' [294] Morus, for example, argued that the effects of distorting scales, distances and

[290] Edwards, Making histories, 13-34; M. Langford, *Suspended Conversations The Afterlife of Memory in Photographic Albums*, McGill-Queen's University Press, 2007, 241.
[291] Edwards, Making histories, 13-34.
[292] Schneider, *Culture and Enchantment*, 3.
[293] Mannoni, *The Great Art of Light And Shadow,* 273-76 and 277-78.
[294] Schwartz, The geography lesson, 16.

perspectives resulted in the disorientation of spectators.[295] The dissolving of distance by photography, previously alluded to by Ryan, functioned for Schwartz, 'as a conduit to another time and place'.[296] Photographs 'as inducements to travel, a means of engaging with place; as souvenirs of travel, a way of bringing places and experiences home; as surrogates for travel, a medium of seeing across space and time' are apparent in projected photographic lantern-slides, albeit on a greater, magnified scale and to heightened effect.[297] Images, scholars attest, could provide audiences with an 'experience of virtual mobility' by transporting them to a distant location, or conversely, some aspect of said location to the audience, for either the purposes of pleasurable distraction or scientific scrutiny.[298] Accordingly, vicarious travel is perceived as one of the principal effects of lantern-slide projections staged for communicating geographical knowledge, entertainment, imperial, missionary or political purposes.[299] Trickery, as Mannoni, Morus and Lachapelle observed, and the visual effects that misdirected and deceived the senses were common techniques of education and entertainments.[300] Imaginations were thus harnessed in the service of nineteenth-century notions of progress, aspirations to social mobility and specific utopian ideologies and ideological projects.

[295] Morus, Seeing and believing science, 103.
[296] Ryan, Photography, visual revolutions and Victorian geography, 203; J. M. Schwartz, Overlapping Ambiguities, Disciplinary Perspectives and Metaphors of Looking in Daniels, DeLyser, Entrikin, Richardson (Eds), *Envisioning Landscapes,* 234.
[297] Schwartz, Overlapping ambiguities in Daniels, DeLyser, Entrikin, Richardson (Eds), *Envisioning Landscapes*, 228.
[298] Daly, *Literature, Technology, Modernity 1860-2000*, 57; Huhtamo, *Illusions in Motion*.
[299] E. Godbey, Picture me sane: photography and the magic lantern in a nineteenth-century asylum*, American Studies* 41 (1), (Spring, 2000), 31-69; Ryan, Photography, visual revolutions and Victorian geography, 229; M. Warner, *Phantasmagoria: Spirit Visions, Metaphors, and Media into the Twenty-first Century*, Oxford University Press, 2006, 14; Keighren, Giving voice to geography: popular lectures and the diffusion of knowledge, 198-203.
[300] Mannoni, W. Nekes, M. Warner, *Eyes, Lies & Illusions, The Art of Deception*, 14; Morus, Seeing and believing science, 104; Lachapelle, Science on stage, 297-315; Schaffer, Transport phenomena, 71-91.

Nineteenth-century audiences were attracted to collective public entertainments and scientific displays in which they felt themselves to be transported elsewhere.[301] Here too the Lévi-Straussian chiasma provides a useful frame in which to understand these transformative experiences.

Historically, the lantern has been cast as a toy.[302] Clark and Doel transport their readers across a panoramic landscape in which the lantern's transformative effects in creating 'motionless trips' are set in relation to other devices and animated pictures such as the stereoscope, diorama, moving panoramas, thaumatrope, phenakistiscope, zoe-trope, and praxinoscope, often perceived as precursors of moving film, but in their study particularized.[303] The abstraction of space and time via both modes of transport, and parallel virtual experiences engendered by particular spatial and temporal logics of optical devices, are credible. Yet the RGS lantern-slide lectures query their study in a number of ways; notably Clark and Doel's foregrounding of the stereoscope and their discussion of the effects of optical technologies over the perceptions of those interacting with them historically.[304] Additionally, whilst the dissolution of time and space is accentuated, the study fails to convey the experience of new technology-mediated space-times in specific historical contexts. In their objectification of the devices as the subjects of their study they excise audiences and their embodied responses that create meaning through the chiastic process of vision and interpretation.

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[301] Such as Barker's panorama discussed by Morus. Morus, Seeing and believing science, 103; Schaffer, Transport phenomena, 71-91.
[302] Mannoni, W. Nekes, M. Warner, *Eyes, Lies & Illusions, The Art of Deception*, 230.
[303] D. B. Clark and M. A. Doel, Engineering space and time: moving pictures and motionless trips, *Journal of Historical Geography* 31 (2005), 41–60.
[304] Clark and Doel, Engineering space and time: moving pictures and motionless trips, 53

Critical perspectives of occularcentrism fed Bissell's recent exploration of 'the fluid relationships between everyday visuality, materiality and mobility through practices'.[305] Keen to stress the active role performed by the material frame of space in this process, Bissell acknowledged that embodied practices of virtual travel were always and inherently multisensual.[306] He, nonetheless, emphasized that 'sublime forms of vision emerge to produce a variety of passive embodied effects.'[307] Whilst concurring with the view of embodied virtual travel, the cases discussed in this thesis query the charge of passivity by taking the view that imaginations are material and that changes in emotional states are active, transformative experiences for individuals and groups.

Lantern-slides and the social question

Historical geography and lantern studies intersect in their concern over nineteenth-century social questions.[308] Crangle and Heard located nineteenth-century temperance movement lantern undertakings within a longer vein of phantasmagoria.[309] Temperance schemes shared common ground with a number of other Christian and social welfare organisations. These, conceivably non-commercial, philanthropic organisations also employed the lantern to draw audiences and promulgate their messages. Although Burton's study of the Co-operative movement in Britain focuses on

[305] D. Bissell, Visualising everyday geographies: practices of vision through travel-time, *Transactions of the Institute of British Geographers* 34 (1), 2009, 42.
[306] Bissell, Visualising everyday geographies, 44.
[307] Bissell, Visualising everyday geographies, 48-49.
[308] B. Hudson, The new geography and the new imperialism, 1870-1918, *Antipode* 9 (2), (1972), 12-19; Ryan, Visualizing imperial geography: Halford Mackinder and the Colonial Office Visual Instruction Committee, 1902-11, *Ecumene* 1, (1994), 157-76; Ryan, *Picturing Empire*; Maddrell, Empire, emigration and school geography: changing discourses of Imperial citizenship, 1880–1925; Ploszajska, *Geographical Education, Empire and Citizenship, 1870–1944.*
[309] R. Crangle and M. Heard, The temperance phantasmagoria in Crangle, Heard and van Dooren (Eds), *Realms of Light,* The Magic Lantern Society, 2005, 46–55.

film, and is set within a slightly later timeframe than this study, as I show in Chapter 7 in discussing Halford Mackinder's journey toward geography, it is relevant since some of his earliest teaching was undertaken before Co-operative Society audiences.[310] Gärtner's investigations of lantern shows for Christian missionizing by the Sunday School Union and the Church Army in the UK comprise yet another example of extensive lantern use in portraying, disseminating and debating social questions of the day.[311] He disclosed the itinerant nature of the Church Missionary Society lantern-slide displays and the use of horse vans as vehicles for the transportative effects of lantern shows across rural Britain. Eifler rounded up those studies so as to concentrate on presentational contexts of lantern shows in British poor relief work of welfare organisations, including the Band of Hope Union, and labour organisations agitating for socio-political reform, at the turn of the nineteenth-and twentieth-centuries.[312] In doing so she took in the rich emotional and 'sensory experiences' engendered by such instructive and educational lantern displays that sought to win the hearts and minds of

[310] A. Burton, *The British Consumer Co-operative Movement and Film, 1890s-1960*, Manchester University Press, 2005.

[311] T. Gärtner, The Sunday School Chronicle: Eine Quelle zur Nutzung der Laterna magica in englischen Sonntagsschulen. [A source for studying the use of the magic lantern in English Sunday Schools]. Kintop 14/15. Quellen und Perspektiven [Sources and Perspectives], 2006, 25–35; T. Gärtner, The church on wheels: travelling magic lantern mission in late Victorian England, in *Travelling cinema in Europe: Sources and perspectives,* M. Loiperdinger (Ed), Stroemfeld Roter Stern, 2008, 129–41 in K. Eifler, Between attraction and instruction: lantern shows in British poor relief, *Early Popular Visual Culture* 8 (4), (November 2010), 363–384; E. K. Morgan, *"True Types of The London Poor": Adolph Smith and John Thomson's Street Life in London*, Dissertation Submitted to the Faculty of the School of Art, Division of Art History, the Graduate College, University of Arizona, 2012, 113.

[312] Eifler, Between attraction and instruction, 363–384.

audiences.[313] Their programmes astutely included the provision of food and drink and other sensory stimuli such as brass bands, collective singing and humorous interludes.[314] The creation of 'media departments' that supplied lecturer, lecturers, slides and other necessary equipment on massive scales by these charitable organisations from the late 1880s onwards was also addressed.[315] The RGS was similar to these schemes in a number of respects, notably in the inclusion of food and drink at lectures and conversazione soirées and its lantern-slide hire scheme.

Just exactly how do you observe lantern-slides?

Visual matters matter to geography. In 1911 Halford Mackinder observed that the discipline was 'a special mode and habit of thought, […] a special form of visualization […] thinking geographically'.[316] Since then historical geographers have expended much energy in investigating the longevity and extent of the relationship between geography and observation. Mayhew drew attention to John Locke's description of geography as the 'eye of history'. [317] Nineteenth-century textual inscriptions of *How to Observe: Morals and Manners*, *Hints to Travellers*, *The Art of Travel* and *The Traveller's Remembrancer* have been read by Withers and Driver as attempts to tame the unruly eye of the traveller and instruct in 'what to observe and how to observe'.[318]

Geography's 'visual realm' engenders questions about the capacity of

[313] Eifler, Between attraction and instruction, 364.
[314] Eifler, Between attraction and instruction, 371-376.
[315] Eifler, Between attraction and instruction, 368-371.
[316] Ryan, The nineteenth-century visual culture reader, 146.
[317] R. Mayhew, Halford Mackinder's 'new' political geography and the geographical tradition, *Political Geography* 19 (6), (August 2000), 771-791.
[318] C. Herbert, *Culture and Anomie: Ethnographic Imagination In The Nineteenth Century*, University of Chicago Press, 1991, 153-54 and 262-5; Driver, *Geography Militant;* and Withers, Science, scientific instruments and questions of method in nineteenth-century British geography, 167-179.

geographers to both represent and intervene in the world they perceive.[319] Historians of visual media and historical geographers come together in considering the locational particularities of images in knowledge-making practices.[320] As stated above, there has been an underlining of the diversity of lantern-slide imagery and the fact that it was not exclusively photographic.[321] Historians of photography have commented on the social and spatial nature of visual media and observed that 'photography as such has no identity. Its status as a technology varies with the power relations which invest it. Its nature as a practice depends on the agents and institutions which set it to work... and its products are legible and meaningful only within the particular currencies they have'. [322] Additionally, it is acknowledged that the locations where science is performed affect 'the reliability, veracity and very shape of the knowledge produced.'[323] Attention has also been drawn to 'the mundane practices of seeing…the sorts of architectures and technologies that were needed to realize and sustain particular ways of seeing' of the new visual cultures that emerged during the late eighteenth and early nineteenth centuries.[324]

As well as the act of observation, objects of observation have been the subject of growing focus. Histories of photography have shaped lantern-slide studies in this respect. It is important to acknowledge that both the material form of the lantern-slide and photographs were plural, whilst also related and located on a continuum; it is thus necessary to situate the lantern-slide form in relation to that of the photograph. Schwartz and Ryan's

[319] Driver, *Geography Militant,* 205; Driver, Hidden histories made visible?, 420.
[320] K. Wilder, *Photography and Science*, Reaktion Books, 2009; Edwards, *The Camera as Historian*, 55-56 and 80-90.
[321] Ryan, Who's afraid of visual culture?*,* 233.
[322] J. Tagg, *The Burden of Representation*, 1988 in Ryan, *Photography, Geography and Empire, 1840-1914* on the work of V. Burgin, (Ed) *Thinking Photography*, 1982, 13.
[323] Naylor, The field, the museum and the lecture hall, 494.
[324] Morus, Seeing and believing science, 107.

investigations of nineteenth-century photography and geography both across the British empire and in the imperial metropolis of London provided histories of photography with a more specifically spatial inflection.[325] They explored uses of photographs across scientific and popular purposes. Schwartz located photographs within a wider assemblage of material manifestations of geography, including globes and atlases.[326] Whilst Ryan pluralized early photographic material forms and journeyed through the rapidly changing processes of photographic development to negatives and lantern-slides.[327] The diversity of forms, with sometimes overlapping geographies of production and reception, were previously acknowledged, but histories of photography generally foregrounded certain forms over others to the point of distortion.[328] Lantern-slides were consequently late in coming to the attention of academic historians of visual culture.[329]

That lantern-slides are, as Crangle posited, a 'hybrid' medium, is reflected in a recent spate of studies that explore the dynamics of the lantern in relation to other technological media of texts, photographs and moving film.[330] The lantern has thus come on to the radar of wider cultural

[325] Schwartz, The geography lesson, 16–45; Ryan, Photography, geography and empire, 1840-1914; Ryan, *Picturing Empire.*
[326] Schwartz, The geography lesson, 16–45.
[327] Ryan, *Photography, geography and empire, 1840-1914*.
[328] Schwartz, The geography lesson, 16–45.
[329] In considering why this was the case we can speculate that issues of an on first-appearances uninspiring homogeneity of form and colour (less easily visually knowable than photos on paper or daguerotypes), visually and haptically unappealing; cold, fragile or the fact that they were made of dangerously sharp glass, perceived as a "mass medium" less important (later) and as mere reproductions rather than original photographs in their own right (thus ignoring edited images and the many manuscript and printed additions from titles, names, locations, manufacturers, materials, sequence numbers added to lantern-slides) (and thus further removed from a positive objectively conceived truthful represented subject), complicated and laborious (as in requiring more time and additional physical energy) to see as requiring an additional light source (natural or human-made) and needing a lantern or viewer to project them (especially for some coloured ones), less immediately viewable and readable/consumable than a photograph and less exciting than moving film (suggesting a notional hierarchy of visual imagery prevails that is not solely dependent upon notions of technological modernity and advancement), or the fact that they might be seen as overwhelming in their numbers.
[330] Crangle, Hybrid texts, 130-132.

and material histories and is, consequently, gradually being understood within histories of more extensive temporal and spatial scopes. These works have influenced the areas explored, and approaches adopted in investigations of geography's past visual material practices. Thus over the last two decades historical geographers have dedicated considerable energy to a growing body of work coalesced around slides and the generalized concept of 'slideness' within past geographical instruction.[331] A study of the Geographical Association's (GA) origins as a scheme for the production, hire and exchange of lantern-slides for an initially exclusive, but gradually more socially-diverse, group of school teachers of geography, from 1893 onwards marked this.[332] This constituted an important first in its reinsertion of lantern-slides on to the historical geographical horizon, but the study made few connections with the later nineteenth-century RGS practices or wider contemporaneous visual landscapes.

Historical and cultural geographers have also debated the significance of the magic lantern to understandings of geographical practices and traditions.[333] The basis of their conversation was a study of art history slide-illustrated lectures by Nelson that sought to transcend an iconographic analysis. Rose drew from this to characterize 'slideness' within geography teaching,[334] and argued for historical and geographical-specific understandings of visual media such as lantern-slides within knowledge-

[331] Rose, On the need to ask how, exactly, is geography 'visual'?, 213; Driver, On geography as a visual discipline, 227-231; Ryan, Who's Afraid of Visual Culture?, 232-237; Matless, Gestures around the visual, 222-226.
[332] W. G. V. Balchin, *The Geographical Association: The First Hundred Years 1893-1993.* Geographical Association, 1993.
[333] Rose, On the need to ask how, exactly, is geography 'visual'?, 212-221; Driver, On geography as a visual discipline; Ryan, Who's afraid of visual culture?; Matless, Gestures around the visual, 222-226.
[334] R. Nelson, The slide lecture: Or, the work of art history in the age of mechanical reproduction, *Critical Inquiry* 26**,** (2000), 414-434; Rose, On the need to ask how, exactly, is geography 'visual'?, 212-221.

making performances. Her contribution sat within a then emergent broader wave in histories of science and geography that recognized the value of spatialities of knowledge-making and reception, further discussed below.[335] If Rose was criticized for over-stating the absence of lantern-slide studies and generalization of slide uses by contemporary academic geography lecturers, she constructively pointed to a gap in visual studies of the development of the modern, that is nineteenth- and twentieth-century, geographical visual imaginary. This sparked a wider conversation about the historical uses of the lantern and lantern-slides. Inspired by Nelson's stressing of the importance of the 'performative triangle . . . of speaker, audience, and image,'[336] Rose appealed for critical and 'careful, empirical research that explores the dynamics of image, audience and space in ways that remain alert to the power relations that are inherent in all of these'.[337] Nevertheless, she made theoretically explicit what was in Ryan's earlier study implicit. Yet a key criticism from historical geographers centred around her universalizing analysis of the slide lecture as 'a kind of "disciplinary visuality" in Anglo-American geography' that practically caricatured more profound questions.[338]

Social understandings of knowledge production have constellated around images. Ryan's pioneering study of imperial photography and geography incorporated lantern-slides into this wider photographic lineage with the assertion that 'photography in the nineteenth century comprised a wide range of visual experiences, from the stereo-scope to the lantern-slide

[335] D. Livingstone, Making space for science, *Erdkunde* 54, (2000), 285-296; Lorimer and Spedding, Excavating geography's hidden spaces, 294-302 cited in Driver, On geography as a visual discipline, 229.
[336] Nelson, The slide lecture: Or, the work of art history in the age of mechanical reproduction, *Critical Inquiry 26,* 2000, 415.
[337] Rose, On the need to ask how, exactly, is geography 'visual'?, 219.
[338] Ryan, Who's afraid of visual culture?, 233.

show.'[339] Ryan acknowledged the significance of technologies in mediating audience image viewing experiences, yet did not trace audience reception of imperial photographs on particularly extensive spatial or temporal scales. I discuss this below in relation to the RGS' and other learned societies' public performances of knowledge. Driver and Ryan also asserted that 'a mistrust of the visual as a mode of geographical knowledge' has been as much a feature of the discipline as has 'the reliance on visual evidence.'[340] In discussing the adoption of, and resistance to, the lantern, these arguments are confirmed. Driver's historical contextualization extended the collective conversation by painting a broader picture of the then current state of the visual in geography, historical lantern-slide modalities and centrality of the medium in a notional geographical epistemology or ways of seeing.[341] These concerns resurface in the chapters below which agree with Ryan and Driver's cautioning of too general a characterization of slideness as 'strikingly uniform'.[342]

Latterly a handful of studies have addressed the lantern-slide lecture practices of figures associated with the RGS. Cox researched the ethnologist and explorer Everard im Thurn's lantern-slide production and reconciled the creation of visual and material aspects of lantern-slides, and the function of these in im Thurn's construction of an anthropologically-

[339] Ryan, Photography, geography and Eempire, 1840-1914, 22.
[340] Driver, *Geography Militant;* Driver, On geography as a visual discipline; Ryan, Who's afraid of visual culture?, 234; Ryan, Photography, visual revolutions and Victorian geography.
[341] J. Ryan, Visualizing imperial geography: Halford Mackinder and the Colonial Office Visual Instruction Committee, 1902-11, *Ecumene* 1, (1994), 157-76; T. Ploszajska, *Geographical Education, Empire and Citizenship: Geographical Teaching and Learning in English Schools, 1870–1944*. Historical Geography Research Series no 35 (1999) in Driver, On geography as a visual discipline.
[342] Rose, On the need to ask how, exactly, is geography 'visual'?, 214; Matless, Gestures around the visual, 224.

informed, hierarchically-organized visual geography of race.[343] Although alluding to the manipulation of the conceivably 'original' photograph and the illumination of background elements in it, Cox conceived of the lantern-slide production process as one of translation. Recently Jones situated the explorer-artist Thomas Baines' hand-painted lantern-slides within the artist's wider oeuvre and the hidden histories of co-operation between British explorers and indigenous agency of local collaborators.[344] In an earlier discussion centred around a collection of eight extant hand-painted lantern-slides by Baines, Hartrick described the artist as a purveyor of 'rational recreation'.[345] Although dominated by an iconographic analysis of lantern-slides, the study identifies the creation, via the lantern, of a 'powerful emotional and performative space'.[346] There was a confluence, Hartrick concluded, in Baines' lectures of science and spectacular sensational effects, a blurring of the boundaries between documentation and representation, in what is essentialized as the artist's communication of British imperial, masculinized racial hierarchies.[347] She nevertheless conceded that disjunctures arose when audience interpretations of Baines's images significantly differed from Baines's intended meanings, notably regarding philanthropic visions of the peoples and places explored.[348]

I also draw on existing studies of the first uses of the lantern in the seventeenth century. As stated by Koen Vermeir, the magical qualities of

[343] A. Cox, Purifying bodies, translating race: the lantern slides of Sir Everard im Thurn, *History of Photography* 31 (4), (Winter 2007), 348-64.
[344] Jones, *Local Knowledge, Indigenous Agency and the Role of Intermediaries in the History of Exploration: Studies from the RGS-IBG Collections*, 93 – 138.
[345] E. Hartrick, Thomas Baines: empire man and magic lanternist, 541 in K. Darian-Smith, P. Grimshaw, K. Lindsey, S. Mcintyre (Eds), *Exploring the British World: Identity, Cultural Production, Institutions,* (RMIT Publishing, 2004).
[346] Hartrick, Thomas Baines: empire man and magic lanternist, 540.
[347] Hartrick, Thomas Baines: empire man and magic lanternist, 544-550.
[348] Hartrick, Thomas Baines: empire man and magic lanternist, 550.

the lantern are often overlooked in academic secondary literature.[349] Vermeir identified the function of the lantern as one of mediation. This facet of the technology continued into the nineteenth century and is seen in the RGS lantern lectures between c.1886 and 1924. The lantern in the seventeenth century, Vermier argued, 'was not merely shown but was performed'.[350] What is important in Vermeir's study is the identification of the lantern's theatrical performance and oblique showing of 'what is really demonstrated. This is not a known physical law, but an invisible world, the existence of which is postulated on the basis of fixed metaphysical principles'.[351] This, I argue below, was the case in the RGS geographical projections spaces. Through the lantern the utility of photography to geographical knowledge making was evidenced to RGS audiences. In doing so the utility of geography, geographical aesthetics and geographical ways of conceiving of a notional 'natural' world to other sciences; geography's social and educational value; and the transcendental value of geography to the human imagination were synchronously demonstrated and produced.

Conclusion

This chapter reviewed the interdisciplinary lantern scholarship pertaining to this study of the RGS historical lantern-slide practices between c. 1885-1924. The first section assessed the medium's place in recent social and scientific histories of London. The chapter then discussed the lantern's mediation of topographical and social exchange and its role in engendering states of transformation. The final section concerned geography; it

[349] K. Vermeir, The magic of the magic lantern (1660–1700).
[350] Vermeir, *The magic of the magic lantern (1660–1700),* 158.
[351] Vermeir, *The magic of the magic lantern (1660–1700),* 158.

summarized studies of lantern use by figures connected to the RGS. This discussed geographers theoretical and historical investigations of the lantern.

The following chapters contribute to an historical geography of the use of the lantern in communicating, producing and interpreting knowledge. I re-insert the RGS into the history of London institutions and their engagement with the lantern, the making of knowledge via its communication to an expanding range of audiences. The foundation of this study is formed by historical geographers' mapping of the lantern and lantern-slides within geography's disciplinary history. In the next chapter I develop their work in relation to recent investigations of the effects of visual materialities by presenting the methods and sources employed in this thesis.

CHAPTER 3. SCOPE IS METHOD

Introduction

The object and value of vision in the practice of geography has been the subject of long-standing discussion within the RGS and amongst geographers. The defining of geography by Halford Mackinder, as pertaining to practices of visualization exemplifies this.[352] However, studies of the visual in geography have not solely concerned visual media and technologies. Nor do they only address the visual for the sake of the visual in historical representations of geography or its educational practices. Instead attention to this area has gathered into a significant force in turning back the disciplinary gazes upon themselves and in fostering self-reflexivity. It is within this context that the geographies of geography have become a central concern. Self-reflexivity now characterizes geography as historical geographers bring to light the development of their own disciplinary visual practices, technologies and the plurality of ways of knowing. The gazes of geography are now temporally and spatially profound, diverse, and of deep penetrating self-scrutiny. Consequently, below I argue that scope, in the sense of seeing with the mind or imagining, is a method because a clearer understanding of the dynamics of vision in the practice of historical geographical investigations of technologies and materials, that are notionally visual, is wanted. Additionally, historical research on any period, place, material or theme requires decisions that are of a visual nature and which pertain to perspective, location, angle, distance or proximity and thus scale, media, length of time of visual exposure to textual and material sources. The very process of research is one of geographical imagination.

[352] Driver, On geography as a visual discipline, 227.

Below I explain the method I devised and the theoretical perspectives that shape the subsequent empirical chapters focused on the RGS lantern and lantern-slide practices. I detail the visual methods with which I approached and interacted with the RGS lantern-slide collections and related archives. I elaborate on my chosen sources.

Theoretical perspectives

The present study sought to synthesize Nelson and Rose's theoretical visual assemblages outlined in Chapter 2. It sought a dynamic historical-geographical scope of analysis with breadth, depth and dimensionality. I took as a starting point the premise that local geographical knowledge is constructed via discursive media of texts, words and images.[353] My aim was to situate the medium of lantern-slides within and across equally 'discursive spaces'[354] in which they were used for diverse purposes and by a number of 'interpretive communities'.[355] Here I employed the concept of 'travelling landscape-objects' to mean 'portable graphic images embedded in different material supports which physically move through space and time, and thus operate as vehicles for the circulation of places; worlds in miniature visually and physically possessed by the beholder and yet able to exercise their own agency.' [356] Della Dora's criticism of a persistence amongst geographers to scrutinize images 'iconographically as static bidimensional' representations led her to conceive of objects in this way.[357] By reinserting material and visual objects into 'a new wave of phenomenological

[353] Driver, *Geography Militant,* 12 – 13.
[354] Ryan, Photography, Visual revolutions and Victorian geography, 199-238; I. M. Keighren, *Bringing Geography to Book.* I.B. Tauris, 2010.
[355] S. E. Fish, *Is there a text in this class?: the authority of interpretive communities,* Harvard University Press, 1980, 170 in Keighren *Reading the reception of Ellen Churchill Semple's Influences of geographic environment (1911),* 27-28.
[356] della Dora, Inverting perspective, 335.
[357] della Dora, Inverting perspective, 334.

experimentations which exalt multisensorial bodily experience and performance' della Dora challenged the notion of landscape as text and in doing so transcended both iconographic representation and interpretation.[358] This highlighted the material nature of landscapes, texts and objects. Around this the concept of 'travelling landscape-objects' was elaborated in order to present an approach that accessed graphic landscape representations as 'these *are,* rather than what they simply *represent* or show.'[359]

As a heuristic device the concept of 'landscape-objects' therefore enabled me to trace the motions in which lantern-slides were set across the Society's diverse spaces of projection and through the hands, and indeed individual and collective imaginations, of those who interacted with lantern-slides, and who thus became producers of geographical knowledge.[360] This conceptual approach overcame the apparent visual and material homogeneity, and too often posited dichotomy between visual and material qualities, of the lantern-slide form and revealed that the latter are not mere copies of images that exist elsewhere in the RGS-IBG collections. I therefore considered visual studies in which 'object-hood' is regarded as complementary to iconographic analysis since della Dora, concurring with Edwards and Hart, suggested that image and referent are laminated together.[361]

Further reflections on the realm of light come from Bille and Sørensen whose 'anthropology of luminosity and the agency of light' asks 'how do people use light, and what does light *do*?' across diverse

[358] della Dora, Inverting perspective, 334.
[359] della Dora, Inverting perspective, 334.
[360] della Dora, Inverting perspective, 335.
[361] Edwards and Hart, Photographs Object Histories, 2 quoted in V. della Dora, Travelling landscape-objects, *Progress in Human Geography* 33 (3), (2009), 334-354.

lightscapes.[362] The term lightscape is taken here to mean how a 'social life as a way of reflecting notions of identity, cultural heritage, morality, securing possessions' is constructed around light.[363] The authors break the lightscape down into its constituent parts, each conceived and defined from a distinct geographical perspective, of lumen, lux and their social orchestration.[364] 'Light,' they explained, originates etymologically 'from old English *leoht,* meaning luminous, from Indo-European *leuk,* to shine, to see'.[365] Understood as *lumen* 'light as external, objective matter'.[366] Finally, *lux* refers to 'light as subjective, and interior; as sight and mental sensation'.[367]

The expansion of the theoretical field of historical geography away from the cultural materialist basis into further abstraction can be seen in other recent works.[368] The attributes of lightscape, discussed above, also fall into the category of 'conceptual space', that MacDonald advocated was ripe for historical-geographical explorations.[369] Thus MacDonald reflected upon the evolution of disciplinary approaches to the visual, first, by reassessing Cosgrove's thinking that had a deeply rooted material base, evidenced in his studies of architecture, imperialism, painting, photography

[362] M. Bille and T. F. Sørensen, Anthropology of luminosity and the agency of light, *Journal of Material Culture* 12 (3), (November 2012), 280. See also Bernard Klahn 'Fresnels' Particular Waves: Models of Lightas Catalytic Modes of Worldmaking in Early Modern Times, in D. Clifford, E. Wadge, A. Warwick and M. Willis (Eds) *Repositioning Victorian Sciences, Shifting Centres in Nineteenth-century scientific thinking*, Anthem Press, 2006, 157-171.
[363] Bille and Sørensen, Anthropology of luminosity and the agency of light, 266.
[364] Bille and Sørensen, Anthropology of luminosity and the agency of light, 280.
[365] C. Classen, *Worlds of Sense: Exploring the Senses in History and Across Cultures*, Routledge, 1993, 68 in Bille and Sørensen, Anthropology of luminosity and the agency of light, 264.
[366] Classen, *Worlds of Sense: Exploring the Senses in History and Across Cultures*, 68 in Bille and Sørensen, Anthropology of luminosity and the agency of light, 264.
[367] M. Jay, *Downcast Eyes: The Denigration of Vision in Twentieth-Century French Thought*. University of California Press, 1993, 29 in Bille and Sørensen, Anthropology of luminosity and the agency of light, 264.
[368] della Dora, Inverting Perspective, 239-246; MacDonald, Technician of Light, 269-279.
[369] MacDonald, Technician of light, 269-279.

and cartography, which nevertheless has restrictions.[370] Cosgrove's conceptualizing vision, for MacDonald, was never one of 'abstract and free-floating discourse; it is always grounded in specific context.'[371] A further important remark concerned the position of a largely theoretical discussion about visuality and geographical knowledge between Driver, Matless, Rose and Ryan.[372] The discussion was 'a measured form of retreat' from the material base in the construction of a theoretical, and relativistic, visual ensemble that included the image, audience and space.[373] This repositioning was signaled through Rose's questioning of 'how, exactly, is geography 'visual'?'[374]

Della Dora's conceptual compositional space of 'numinous materialites' is, in my view, helpful in encompassing the above perspectives.[375] The conceptual roots of 'numinous materialities' reside in the processes of interaction between human viewer and icon, in the context of Christian Orthodox worship. This theoretical space synthesized representational and phenomenological perspectives that are implicitly spatial.[376] Della Dora's conceptual space is powerful in its contrasting of the directionality of Byzantine Orthodox icon perspective with that of Western linear perspective, as traditionally conceived by scholars.[377] For her the so-called 'inverse' perspective of icons and frescoes, mosaic cycles 'collapses the distance between the seer and seen; it consciously resists naturalism

[370] MacDonald, Technician of light, 272.
[371] MacDonald, Technician of light, 272.
[372] Rose, On the need to ask how, exactly, is geography 'visual'?, 212-221; Driver, On geography as a visual discipline, 227-231; Matless, Gestures around the visual, 222-226; Ryan, Who's afraid of visual culture?, 232-237.
[373] MacDonald, Technician of light, 272.
[374] Rose, On the need to ask how, exactly, is geography 'visual'?, 212-221 in MacDonald, Technician of light, 269-279.
[375] della Dora, Inverting perspective, 239-246.
[376] della Dora, Inverting perspective, 239-246.
[377] della Dora, Inverting perspective, 240.

and literally “wraps” the beholder, making her its vanishing point’.[378] Within the specific context of ‘liturgical performance and private worship’ icons become active and integral to the ensemble between icon, viewer and worship space.[379] Within this context of worship, the viewer experiences a communion with the image as the icon is instrumental in mediating a space beyond its material surface.[380] The act of engagement was presented as a ‘multi-sensorial experience’ and a ‘process of transformation worship’.[381] The paradoxical quality of icons was thus recognized in their assigned ability to ‘blur the boundaries between referent and symbol, same and otherness, temporal and eternal, immanent and transcendent’.[382] Della Dora then underscored that it is the act of viewing and the participation of both human actor who views, and icon, in a common space of ‘compositional rhetoric’ that the icon’s symbolic power is perceived and felt.[383] Thus it is via the process of ‘participation’ that icons are rendered holy and ‘statements and embodiments of the truth, vehicles of Grace, making the intangible tangible’.[384] Icons thus relate to the transfiguration of the material world, including that of human participants. They emanate ‘a personal involvement in the act of perceiving, even to the extent of being changed by what one sees’.[385]

Della Dora therefore made an important leap into the theoretical void in passing from the materiality of the ‘travelling landscape-object’ towards,

[378] della Dora, Inverting perspective, 240.
[379] della Dora, Inverting perspective.
[380] della Dora, Inverting perspective, 240.
[381] della Dora, Inverting perspective, 241.
[382] della Dora, Inverting perspective, 241-242.
[383] della Dora, Inverting perspective, 243.
[384] della Dora, Inverting perspective, 242.
[385] della Dora, Inverting perspective, 242.

no less material, 'lightscape' of iconic 'numinous materialities'.[386] By venturing further into the realm of the symbolic in human consciousness, two conclusions emerge; each concerns questions of positionality. Firstly, regarding Rose's conceptual shift; this historical geographical study of the RGS lantern-slide collections constitutes an applied experimental study of the questions raised by Rose and discussed above. This transit is one into a 'conceptual space' of vision between viewer and image.[387] The concept of 'numinous materialities' is further useful in demonstrating how lantern-slides as a material medium, and the images produced through their projection in the RGS lectures, were viewed, and interpreted in multiple ways, across a number of spaces. For the concepts of 'landscape-objects' and 'numinous materialities' to be useful here they need to be rendered flexible and scaled up to fit the 'discursive spaces' in which lantern-slides were historically made to perform.[388] This can be done by drawing on the concept of geographical projections. As seen above, historical geographers have made the conceptual leap. It now remains to pluralize, to dynamize, and to test across a number of historical-, media- and site-specific contexts. The alternative is to retreat back towards a static and singular material basis for understanding the hermeneutics of geographical images. This study therefore constitutes a way of feeling its way through the theoretical darkness towards such a perspective. Carried by the above studies, I open up a new and chiastic space of exchange, the interactive visual and verbal lantern-slide lecture.[389] This concept reconciles the models of both Nelson

[386] Jay, Downcast Eyes, 29 and Classen, *Worlds of Sense,* 68 in Bille and Sørensen, Anthropology of luminosity and the agency of light; della Dora, Travelling landscape-objects, 334-354; della Dora, Inverting perspective, 240.
[387] della Dora, Inverting perspective, 239-246; MacDonald, Technician of light, 269-279.
[388] Krauss, Photography's Discursive Spaces: Landscape/View, 311-319.
[389] This is informed by R. Crangle, *Hybrid Texts,* 225.

and Rose. The geographical projections space was one made up of the technology of the lantern, the lantern-slide image it projected and the projected image upon a screen, and audiences. Here the image and socio-techno space effectively become one.

My understanding of the hybridization of space also draws from the concept of the chiasma following the conceptual theorizing of the term by Lévi-Strauss outlined above. Named after the Greek letter *chi,* or X, i.e. a cross, a chiasma is essentially a type of inversion.[390] A useful definition comes from John Welch in his preface to a collection of essays examining the uses of chiasmus in Antiquity: 'The basic figure of chiasm simply involves the reversal of the order of words in balancing clauses or phrases' (1). […] Example: Pope's 'A wit with dunces, and a dunce with wits.' But for Lévi-Strauss the process of undertaking field-work and of writing ethnographies was a chiastic journey comprising a departure and a return. Subsequent to Lévi-Strauss's harnessing of the concept, two principal branches of study have adopted the chiasma; studies of aesthetics and rhetoric. Both pertain to this study since it concerns the projection of lantern-slide images and processes of human vision and understanding within the rhetorical performances of lectures. The chiasma offers a more precise vision of knowledge making processes than the term 'hybridization'. It affords the visualization of the internal structure of inversions, and the elliptical dynamics of processes of inversion, across a number of scales. Wiseman was not concerned with the chiasma 'as a figure of speech or style as such, i.e. not as a rhetorical figure in the classical sense. Rather […] with chiasmus as a pattern of thought, an organising schema, a

[390] B. Wiseman, Claude Lévi-Strauss, Chiasmus and the ethnographic journey, 1.

structure that determines, from behind the scenes, the form and content of a number of Lévi-Strauss's anthropological theories.[391]

Here I have adapted della Dora's iconographic and phenomenological concept of 'numinous materialities' to wider contexts. The theoretical basis of my research here is a synthesis of two concepts of performativity that form the assemblage of images and human participants that collectively manifest enchantment. The following figures (Figures 6, 7 & 8) visually summarize 'travelling landscape-objects' and 'numinous materialites':[392]

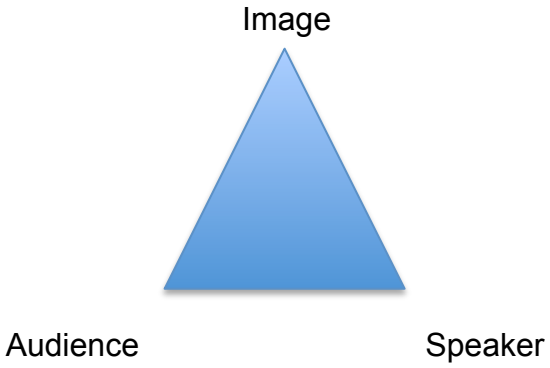

Figure 6. Nelson's (2000) performative triangle of speaker, audience, and image.

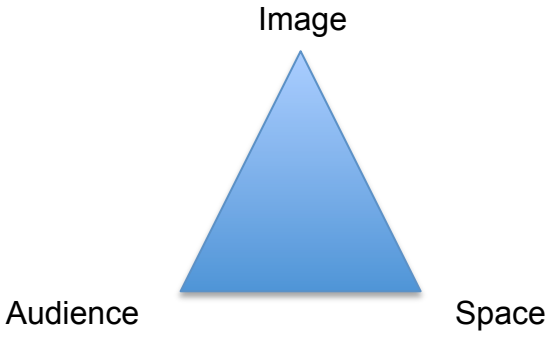

Figure 7. Rose's performative triangle of image, audience and space.

[391] (B. Wiseman, Claude Lévi-Strauss, Chiasmus and the ethnographic journey, 1).
[392] della Dora, Travelling landscape-objects, 334-354; della Dora, Inverting perspective, 239-246.

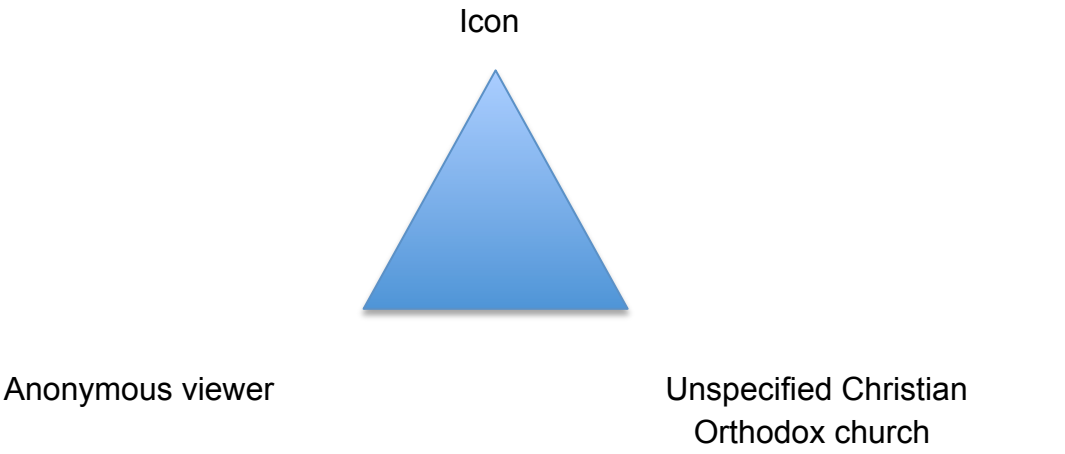

Figure 8. della Dora's 'numinous materialities' conceptual space.

If landscape-object theory sought to transcend textual landscape representation and iconography then 'numinous materialities' was conceived to manifest a spiritual experiential space.[393] Yet the 'numinous materialities' of Christian Orthodox 'liturgical performance and private worship' were neither temporally or spatially defined.[394] Moreover, della Dora's study does not name or identify the icons, nor explain the specific powers of individual saints.

Della Dora discussed 'numinous materialites' in relation to an unidentified viewer in an abstract viewing context. [395] 'Numinous materialites' is significant in making explicit the complex spatial dimension of spiritual experience. The 'numinous materialities' frame makes explicit, ie. visible, a space of perceived interaction between image and viewer. Although recognising a space of interaction between ''enchanting' material objects, or 'more-than-human bodies' sensuously interacting with emotional human bodies', her analysis remained dominated by the gaze.[396] For some

[393] della Dora, Inverting perspective, 239-246.
[394] della Dora, Inverting perspective, 239-246.
[395] della Dora, Inverting perspective, 239-246.
[396] J. Bennett, *The Enchantment of Modern Life*, Princeton University Press, 2001; S. Whatmore, Materialist returns: practicing cultural geography in and for a more-than-human world. (2006), in della Dora, Travelling landscape-objects, 334.

time scholars of the visual have attempted to record specific examples of what images want and what they do through recourse to notions of agency.[397] However, here the perceived symbolic iconic gaze is problematic and does not transpose to the historical-geographical context of the RGS.[398] What can be drawn from della Dora's study is the perception of attributes within the image. For her the verb 'perceive' takes its origins in 'perscere,' a term she understands as 'to see clearly' and which she stressed implies distancing. For her 'distancing in turn enables 'conceptual control over the world' and can be meaningfully understood in light of Marxist and feminist geographers's observations of the empowered 'mercantile, bourgeois, masculine "distanced gaze" over landscape'.[399] In addition, she asserted that despite the activities of '"more-than-representational" experimenters […] linear perspective has nevertheless been largely naturalized as the way through which we "look at landscape"'.[400] The foundation of her argument on this specific understanding of 'perceive' evolved from the Latin 'perscere', understands that Western linear perspective distances the human viewer, whilst in contrast a Byzantine perspective of icon-viewing collapses 'the distance between the seer and seen; it consciously resists naturalism and literally "wraps" the beholder, making her its vanishing

[397] A. Gell, Art And Agency: An Anthropological Theory, Clarendon Press, 1998; C. Pinney, Piercing the skin of the idol, in C. Pinney and N. Thomas (Eds), *Beyond Aesthetics Art and the Technologies of Enchantment,* 2001, Berg, 157-181.

[398] There was, in my view, an anthropomorphisation of nature in lantern-slide viewing processes that is beyond the scope of this study, that requires a discussion of the specific historical-geographical understanding of the nature of nature and its intentions in the RGS past lectures. See Latour (Latour, *The Modern Cult of The Factish Gods*) for an expansive analysis of the anthropomorphisation of nature via human projections, understood by Latour as transcending technology.

[399] della Dora refers the reader to D. Cosgrove, *Social Formation and Symbolic Landscape,* Totowa, NJ: Barnes and Noble, 1984; D. Cosgrove, Prospect, Perspective and the Evolution of the Landscape Idea, *Transactions of the Institute of British Geographers,* New Series 10, 1985, 45-62; G. Rose, *Feminism and Geography: The limits of Geographical Knowledge*, Cambridge University Press, 1993 in della Dora, Inverting perspective, 239.

[400] della Dora, Inverting perspective, 240.

point'.[401] In this way, the Byzantine perspective has no beginning or end, and the space between of the human viewer and the iconic viewer, comprises a distinct space. I whole-heartedly concur with della Dora's necessary critique of a still too-often touted, essentialized, and fundamentally questionable conception of a rationalizing Western linear perspective. Nevertheless, the foundation of the logic that 'perceive' implies distancing is open to scrutiny. Amongst the word's multiple definitions is 'To take in or apprehend with the mind or senses,' suggesting that to take in, or as the OED definition specifies, 'To take into possession' implies proximity and internalization rather than the remove of the perceiving viewer.[402] Here in the space of numinous interaction between icon and human each could be understood to take in, and acknowledge, the other in an enjoined instance. Additionally, the act of vision is neither singular, nor passive. Physiologically vision occurs through the process of parallax whereby each eye registers a slightly different image. The two images are then reconciled in the chiasmus of the brain where, significantly, they are synthesized and uprighted so as to produce a single, three-dimensional image. Conceived of physiologically, the human act of vision is plural, transformative and embodied even before viewers apply specific historical-geographical layers of interpretation and rescale and re-appropriate images so as to fit into existing subjective imaginaries.[403] It is observable in RGS audience interpretations of lantern-slides. In conjunction, the term 'aesthetics', in what we know of its origins, always did have multi-sensual implications that go beyond seeing and the process of arriving at an understanding through the

[401] della Dora, Inverting perspective, 239-40.
[402] 'Perceive **I.** To take in or apprehend with the mind or senses.[…] II. To take into possession.'
http://www.oed.com/view/Entry/140537?redirectedFrom=perceive& (accessed 25.09.2015)
[403] Armstrong, *Glassworlds.*

visual sense alone, or human instruments of the eyes.[404] It carried no implication of the term visual design, or the science of beauty as it came to be understood in nineteenth-century Europe. Instead 'aesthetics' originally signified *embodied*, rather than simply visual perception. Perception occurred through the eyes and via the mind, and the body since in ancient Greek origin, the term 'to perceive' signified to *feel*. The act of seeing can be understood as a simultaneously occurring holistic process of knowing as an embodied visual, cognitive and emotional one.

In light of such arguments della Dora's work, although significant in recognizing individual responses to images in devotional contexts, might be pertinently pluralized and transposed to the collective responses of the RGS audiences and lantern-slide lectures. I attempt to respond to della Dora's invitation to fill a methodological gap 'between the 'multisensorial landscape' we 'move through' and the landscape images we still 'look at''.[405] The above perspectives therefore structure my understanding of the geographical projections space, visually summarized below (Figure 9). I understand this as comprising a collective assemblage composed of the magic lantern, light, projected lantern-slide images on a screen, the producers comprising lantern-slide-makers, lecturers, audiences. These elements are bound together by the geographical projections 'lightscape'.[406] In doing so the evolving significance of this geographical projections space in our understandings of knowledge-making at the RGS becomes discernable.

[404] See the OED entry for the term 'aesthetics' http://www.oed.com/view/Entry/3237?redirectedFrom=aesthetic#eid and Greek origin 'aesthesis' http://www.oed.com/view/Entry/3234#eid9576018 (accessed 25.09.2015).
[405] della Dora, Travelling landscape-objects, 335.
[406] Bille and Sørensen, Anthropology of luminosity and the agency of light, 266.

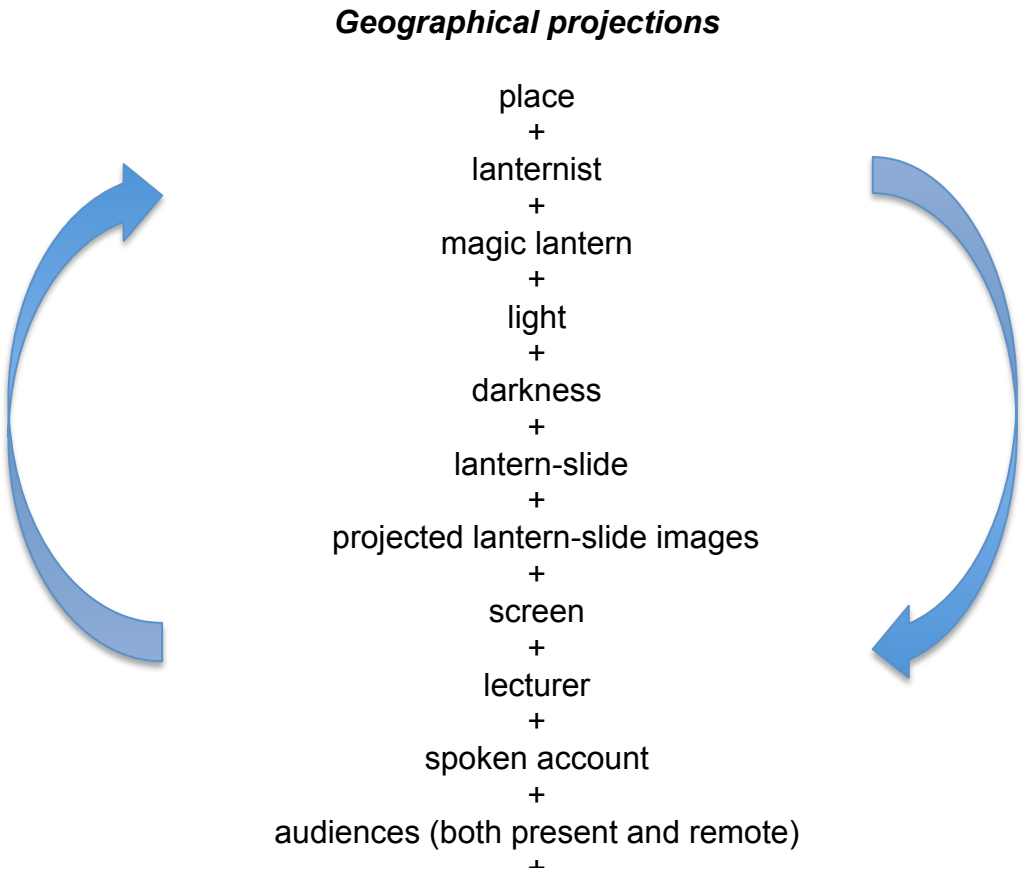

Figure 9. A chiastic geographical projections space composed of place, magic lantern technology, lantern-slide, projected image, screen, lecturer and audiences.

Research questions

This thesis considers the 'lightscape' of the geographical projections space within the RGS lectures.[407] My objective in doing so is to understand the nature of the magic lantern, lantern-slides and the effects of their use within the knowledge-making practices of the RGS in the period c.1885-1924. To do so I ask three key research questions:

[407] Bille and Sørensen, Anthropology of luminosity and the agency of light, 266.

1. *How were the magic lantern and lantern-slides introduced to, and adopted and resisted by, the RGS?*

In seeking to elucidate the historical geographical particularities of lantern-slide adoption at the RGS I take 'travelling landscape-objects' as 'portable graphic images embedded in different material supports which physically move through space and time, and thus operate as vehicles for the circulation of places; worlds in miniature visually and physically possessed by the beholder and yet able to exercise their own agency'.[408] My concern is to assess how lantern-slides when viewed as 'travelling landscape-objects' that are material, rather than solely two-dimensional iconographic forms, provide insights into the historical geographical practices of the RGS, and the processes via which knowledge comes to be socially and spatially produced. The subsequent chapters focus on processes of lantern-slide projection, circulation and reception within and *between* the RGS and wider cultural spheres of geography, science and lantern practices. In exploring the adoption of, and resistance to, the lantern and lantern-slides I follow the processes of 'transit' of lantern-slides, ideas, practices and peoples across 'threshold spaces'.[409]

2. *How did lantern-slides circulate between and through the spaces of RGS activity?*

Here I ask whether lantern-slides can be conceived as 'travelling landscape-objects' and, if so, how they contribute to historical-geographical understandings of the place and spaces of the RGS that they were made to move through. I borrow the 'travelling landscape-object' concept to consider

[408] della Dora, Travelling landscape-objects, 335.
[409] Secord, Knowledge in transit, 664.

how lantern-slides elucidate understandings of the place of the RGS within late nineteenth-century London, and to assess what such perspectives tell us about its nature, shape and place within a wider assemblage of learned societies and knowledge-making institutions.[410] I also ask if when conceived as 'travelling landscape-objects' lantern-slides fill gaps in the historiography of the RGS about its overlooked spaces, its staff, its everyday practices and performances, about 'small stories' of the institution and the role of audiences in the production of geographical knowledge.[411] I locate lantern-slides within the particular spatial dynamics of the RGS knowledge-making practices of lecture performances. This contributes to deeper understandings of the interaction of the internal geographies of the RGS at 1 Savile Row across the 1880s and up to 1913 when the Society relocated to Lowther Lodge.

3. How were audiences at the RGS affected by lantern-slide lectures?

To answer this question I locate lantern-slides within the particular spatial dynamics of the RGS knowledge making practices of the lecture performances. I do so by viewing the RGS lantern-slide lectures as an ensemble comparable to the concept of 'numinous materialites'.[412] In reconciling 'travelling landscape-objects' with 'numinous materialities' a space of participation and performances around the lantern-slides is formed.[413] As well as materiality, the concept of 'travelling landscape-objects' evolved from a concern with macro- and micro- geographies of

[410] della Dora, Travelling landscape-objects, 334–354
[411] M. de Certeau, *The Practice Of Everyday Life,* University of California Press, 2002. Lorimer and Spedding, *Excavating geography's hidden spaces*.
[412] della Dora, Inverting perspective.
[413] della Dora, Travelling landscape-objects*,* 334-354; della Dora, Inverting perspective, 239-246.

reception and audiencing.[414] Consequently, I consider how this informs understandings of audience participation in such performances and their role in making knowledge via an analysis of their recorded responses. Through a close scrutiny of the lantern-slides and published lectures and post-lecture discussions in the *Proceedings* and the *GJ,* as well as in some extant RGS Journal Manuscripts (JMS), I aim to understand the affective responses of audiences to projected lantern-slides. I therefore explore how lantern-slides were used in practices of verbal, visual-material and textual communication to assess Driver's view that there were 'different kinds of authority in different kinds of lectures' at the RGS.[415] Below, I seek to expand and test this assertion by investigating lantern-slide authority in the communication practices of the RGS.[416]

Methods and sources

By relocating and rescaling Latour and Lorimer and Spedding's analogy of 'the mysteries of the "black-boxed" ideas' to the RGS lantern-slide collections, I explain the methodology of this thesis.[417] My task was to unpack the multiple worlds distributed across boxes of lantern-slides and the slides themselves (which can be seen as black 3D, near box-like, objects) to deepen understandings of the processes of formation of the Society's lantern-slide collections and the ways in which the medium

[414] D. Livingstone, Science, text and space: thoughts on the geography of reading, *Transactions of the Institute of British Geographers,* NS 30, 2005, 391–401 cited in della Dora, Inverting perspective, 347.
[415] Driver, On geography as a visual discipline.
[416] della Dora, Travelling landscape-objects.
[417] Latour, *Pandora's Hope, Essays on The Reality of Science Studies,* Harvard University Press, Cambridge, 1999, 130; Golinski, *Making Natural Knowledge, 138-141;* Lorimer and Spedding, Excavating geography's hidden spaces, 229.

shaped the RGS and the knowledge produced there (Figure 10).[418]

Figure 10. Current RGS-IBG lantern-slide storage boxes.

Here, this alternative focus on the unpacking process rather than product challenges widely-held understandings of the archive as 'a static store of documentation.'[419]

In seeking to answer my research questions I identified the RGS archival sources associated with the Society's lantern-slides. The lantern-slide card index systems had first to be understood. Four incomplete, partly and inconsistently overlapping, systems had historically been used to catalogue and use the lantern-slides. These were organized numerically, alphabetically by image-maker or lecturer, by geographical location or

[418] V. della Dora, Putting the world into a box: a geography of nineteenth-century 'travelling landscapes', *Geografiska Annaler. Series B, Human Geography* 89 (4), (2007), 287-306.
[419] Lorimer and Spedding, Excavating geography's hidden spaces, 298.

region, and thematically in terms of human or physical geography (Figure 11.).

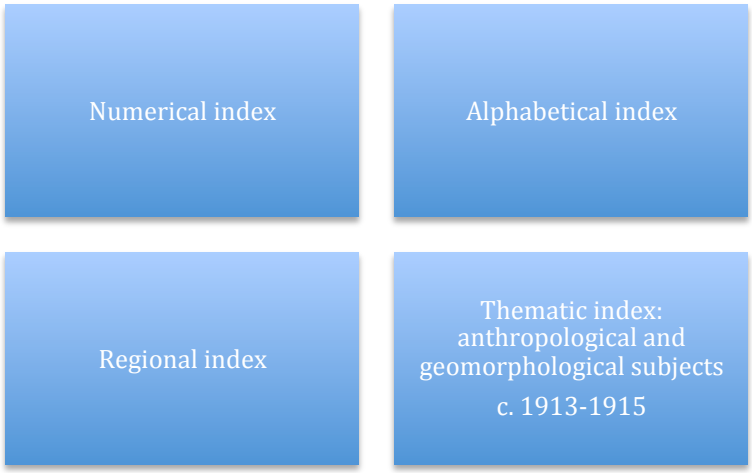

Figure 11. RGS lantern-slide card index systems. (Dates refer to approximate start date of indexing phases).

In the first year of this study I initiated explorations of the lantern-slides by proxy, and as a virtual witness, via these card index systems (Figures 12 & 13.).

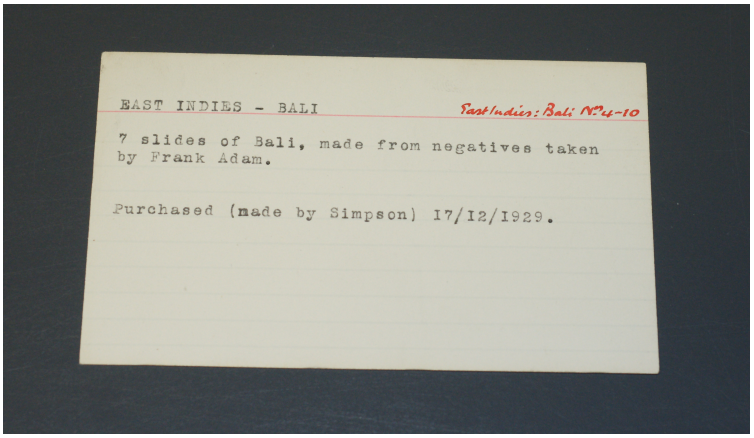

Figure 12. Example of regional RGS lantern-slide index card.

With the index systems I identified lantern-slide sets of geographical, thematic or authorial interest to me. These included slides associated with India, Pakistan and Afghanistan and West Africa, regions and countries I have previously studied and travelled through. The slides of female, admittedly famous, travellers such as Isabella Bishop Bird and Freya Stark also attracted me. I then viewed these specific sets of lantern-slides. This phase of the survey was subjective, but useful in its revelation of the collections' extensive regional and thematic scope,and plurality of individual lantern-slide makers and lecturers associated with them. At this stage I considered organising the empirical chapters of my thesis around a regional model.

This stage also started to reveal the diversity of iconographic forms amongst the lantern-slides. The majority of lantern-slides were photomechanically reproduced. However, within that arc of lantern-slides there is great diversity of the notionally 'original' media, objects and graphic forms represented (Figure 13).

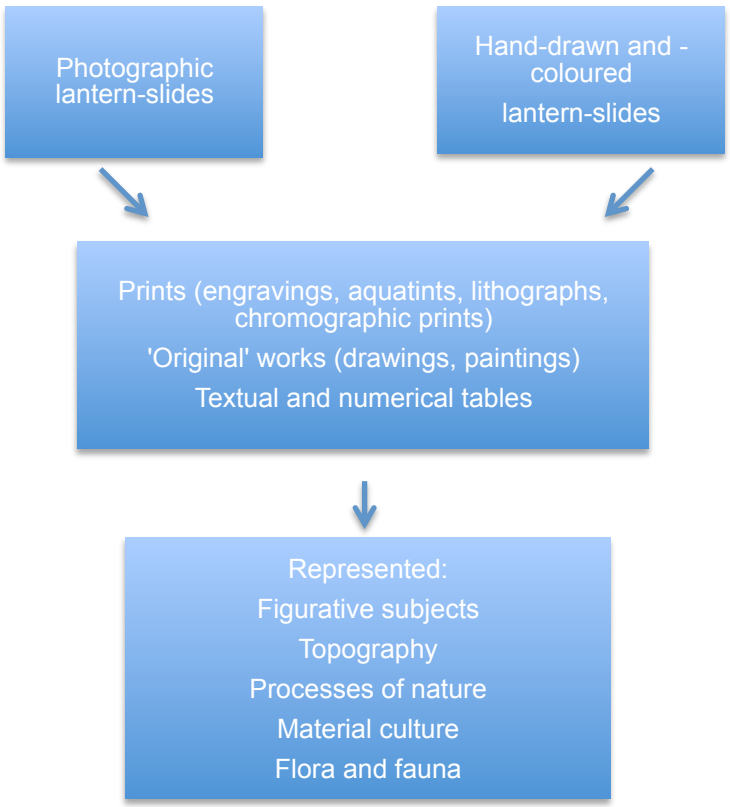

Figure 13. Composition of RGS lantern-slide collections

The plurality of sources from which the lantern-slides were produced was also apparent; certain lantern-slide sets had been purchased by the RGS, others were gifted to the Society or donated by individual Fellows in their life-time or by their families after their death. The currency of lantern-slides in the acts of conspicuous display and consumption of this gift-exchange system was unexpected.[420] It also demonstrated the extent to which not only individuals identified with the RGS, but also to which membership ran in families. This brings to mind the entwinement of the lantern and phantasmagoric shows of ghosts that can be understood to

[420] Edwards, Making histories, 13-34.

have mediated between the worlds of the dead and the living.[421] I also obtained a sense of the extent to which slide sets could be incomplete, the size of sets, the multiple numerical sequences, the inconsistencies in labeling, numbering, titling.

The thesis consisted of a journey in visualisation. Throughout the four years of study my observation of the lantern-slides underwent a series of shifts in the location, focus and scale of observation. Around the very broad, but shallow and necessarily partial, picture of the collections that I outlined in my first year of study, I started to flesh out my understanding of the RGS's historical usage of lantern-slides. As the temporal scope of the lantern-slide collections was unknown, as a starting point I sought to identify the origins of RGS lantern-slide use. This involved the contextualization of the lantern-slides within the Society's publications. Beginning at c.1890, when the Society first purchased a lantern, I realized that lantern-slides were already frequently employed in the letures by that time. Consequently, I worked backwards through the *Proceedings* in an attempt to bring more precision to the first instance of lantern-use.[422] I elected to undertake a close reading of the key RGS publications: *Proceedings of the Royal Geographical Society* and the *Geographical Journal* published between c.1885-1960. This text-based approach enabled me to assess the historical lecture landscapes and associated discussions for details of lantern-slide use.

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[421] Mannoni, *The Great Art of Light And Shadow,* 136-175; Nadis, Review of Simon During's *Modern Enchantments: The Cultural Power of Secular Magic*, in *Technology and Culture* 896; Warner, *Phantasmagoria,* 14; Lachapelle, Science on stage, 298.
[422] Middleton, Some Victorian lady travellers, 67; Ryan, Photography, visual revolutions and Victorian geography, 225.

In Excel I created a core database of RGS lantern-slide lectures in order to visualize the temporal and spatial transformations in the RGS lantern-slide lecture practices between c.1885 and 1960. This was instrumental in enabling the reconciliation of details gleaned from the publications with the lantern-slide card indexes and the extant lantern-slide sets. The core database of lantern-slide lectures was composed of data drawn from the two RGS publications, the *Proceedings of the Royal Geographical Society* and the *Geographical Journal*. It was structured around the following categories: lecture location and delivery date; lecture titles; the lecturer/reader of lecture; the publication date. Additionally, I noted the following: any images accompanying or references to images, particularly lantern-slides, in the published text; the presence/absence of a discussion.

This process afforded insights into the rich and variegated linguistic history of the lantern at the RGS by enabling me to compile a lexicon of the lantern within the Society's practices (Figure 17.). I was then, from this, able to run further searches in JSTOR in order to identify additional references to the lantern in parts of the *Proceedings* and *GJ* other than lectures, notably the 'Reports of Meetings'. This elucidated earlier important references to the RGS's use of the lantern previously unknown. It also indicated that the lantern had been employed from as early as 1886.

Around that skeleton of information I then collated details from the lantern-slide card indexes. These included numerical references in the index systems (or if absent the dominant authorial, geographical or thematic reference); original number of, and number of extant, lantern-slides associated with a lecture and date of lantern-slide (set) destruction. By

engaging with the card index systems it was clear that the lantern-slide collections had been organized, re-organized and catalogued and re-catalogued according to multiple, and constantly changing, knowledge schemes. This sensitized me to looking out for references to these changes as I consulted other parts of the Society's archives.

One of the aims of my thesis was to discover new patterns and ways of seeing in the collections, other than those set up by existing archival systems and historical participants' typologies. The methodology explained here elucidated a historical distinction between the Society's Evening and Technical Meetings. From the primary lantern-slide lecture database, described above, I extracted the data on Evening and Technical Meeting lectures in order to create sub-databases. The process of reviewing the published accounts of lectures between c.1885 -1960 revealed a hitherto undiscerned diversity amongst RGS lantern-slide lectures. The Technical meetings appeared in 1894 and ran until 1904. The Research Department Meetings, continued the Technical Meetings, commenced in c.1904. The Asia Lecture series began in November 1924 and ran, sporadically, until January 1946.[423]

From these sub-databases I also created further sub-sets of lectures: published BAAS lectures; lectures delivered by women; lantern-slides with elements of colouring. By simultaneously consulting the lantern-slide card index systems, the process revealed the presence of lantern-slide sets that were not associated with published lectures. I also discerned the presence of numerous large lantern-slide sets gifted to the Society. Amongst these were slides associated with published lectures, but the majority were not.

[423] The series included at least eleven lectures held sporadically. The Dickson Asia lecture of January 1957 may also relate to this series.

Some of the advantages and restrictions of using the hard copies of the journals and their online counterparts for the study of both lantern-slide practices and the history of the Society were thus revealed.

Chapter 4 shows that the process of collating the databases enabled numerous theoretical perspectives on the changes effected to the lantern-slide practices across space and time. It also, however, generated such an abundance of information concerning the period c.1885-1960, across which substantial institutional, social, technological, conceptual and disciplinary change had occurred that the databases were rendered unwieldy. Because of this, and as the key empirical chapters of the thesis (Chapters 5 to 11) demonstrate, I chose to analyse the earliest key lantern-slide lectures as well as those that were representative of the different lecture types across a narrow time-frame of c.1886-1924.

The process at this point involved using both digital scans (from JSTOR.org) of the RGS publications and hard copies from RGS collections. This highlighted a methodological discrepancy; while the discussions that followed the RGS lectures generally follow directly in the hard copies of the *Proceedings* and *Journal*, online these discussions are mostly, though not always, recorded separately and, in some cases, are not available online. Moreover, JSTOR.org often lacks scans of the Society's 'Announcements' and 'Reports of Meetings', published at the front and back of the *GJ*, respectively. By consulting the hard copies of the journal these sections were found to constitute rich sources of information for this study. The process of drawing up a comparative typology of the Society's meetings from this assemblage of sources allowed me to follow the emergence and evolution of the lectures so as to glean details of their contingent lantern-

slide practices, and the recorded responses of audiences to them, between c.1885 and 1924. I therefore undertook a synthetic geographically- and temporally-specific typological analysis of these lectures; some lectures were defined as Evening lectures and others as Technical meetings or Scientific Evening Meetings in the accounts of RGS meetings that I examined. Few lectures classed as Young Person's Christmas lectures were published and few details about these lectures appear in the journals throughout the period of this study.[424]

In Excel again I collated a separate database about lantern practices sourced from the RGS Committee Minute Books of the period c.1885 to 1960. The two Committees with the richest seams of lantern-slide data were the Finance Committee and the Library and Map Room Committee. From the Finance Committee I drew lecture and lecturer costs, lantern and lanternist hire, costs of materials relating to the use, or storage, of the lantern and lantern-slides. The Library and Map Room Committee minuted detailed decisions regarding accessions and purchases of lantern-slides as well as decisions regarding the storage, cataloguing and destruction of the collections. Additionally, the Scientific Purposes and Education Committee, Education Committee, Conversazione and Soirée Sub-Committee contained significant insights into the Society's diverse historical geography of engagements with the lantern.

The ACRs allowed me to gather annual totals of lantern-slide purchase and accession figures as well as RGS Fellowship numbers. They also contained additional information concerning innovations in the Library and Map Room, significant purchases and changing practices, discussed in

[424] I used a different method to identify the Young Person's Christmas lectures. The notices in the front of the GJ, the extant Young Person's Christmas lecture tickets held by the RGS-IBG were my sources for establishing a still incomplete list of these lectures.

Chapter 4. The Year Books enabled me to cross-reference the lantern-slide purchase and accession, and Fellowship, figures. Since there were a number of years for which ACRs are missing this was important.

The Young Person's Christmas lectures were rarely published in full in the RGS journals. This obliged me to devise an alternative methodology to that presented above. Unlike with the Evening and Technical Meetings it was impossible to use the journals to systematically compile a chronological list of these lectures. I therefore pieced together a picture of them from a more variegated and disseminated array of sources. Beginning with a reference in Mill, I later became aware of the diverse terminology employed by the Society to describe these lectures.[425] The terms included 'Christmas lectures', 'Children's lectures' and the most frequently used 'Young Person's Christmas lectures'. This enabled me to search on JSTOR for references to the announcements for these lectures in the 'The Monthly Record' sections featured in the *GJ* although, as previously stated, the pages on which the lectures were announced do not always feature in JSTOR's online scans. Additionally, it later transpired that the RGS holds several folders on Christmas lectures containing a range of documents; lecture tickets, correspondence between the RGS Secretaries and potential lecturers and advertising brochures of these lecturers. By drawing on these sources, and any references that suggested or confirmed that a lecture had been undertaken, I then returned to the Finance Committee Minutes and JSTOR to precise lecture dates, titles and locations, and lecturers. In conjunction I attempted to cross-reference my findings with the Society's lantern-slide index card systems. This made clear that both the journals and

[425] Mill, *The Record*, 149.

index card systems contain very few references to the Young Person's lectures compared to the Committee Minutes. In corollary the RGS collections hold few lantern-slides associated with these lectures. At present many gaps remain in the list of these lectures held between 1892 and 1960.

The above bodies of data were complimented by more targeted searches of the RGS-IBG archives. I thus had recourse to consulting the collections of correspondence, diaries and documents of the Society's staff and officers, referred to above in Chapter 2. I consulted extant JMSs, and associated peer-reviews of lectures, as well as the correspondence of lecturers.

Historical geographers assert that geographical knowledge 'is produced locally by the spatial practices of fieldwork, and discursively through texts and images.'[426] Driver gestured towards the conceptual field, that is 'always in the process of being constructed,'[427] and that has been extended and brought 'home'.[428] The ever-shifting location of this field is now perceived to reside in part in the museum, the study, the archive, domestic interior and the text.[429] The lantern-slide archive constitutes a field in itself, and one sub-divided into many further fields. The methodology I adopted is informed by this reasoning.

In contouring the spaces of lantern-slide circulation and RGS lantern-slide activity, I attempted 'to travel across the blank spaces' of the lantern-slide collections, slide sets and individual slides to show how the historical lantern practices, and the archive as it is today, connects to many other fields, practices and interpretive constituencies of the RGS of the past and

[426] Driver, *Geography Militant,* 13.
[427] Driver, *Geography Militant,* 12-13.
[428] Driver, *Geography Militant,* 10-13.
[429] This serves as a cross-section, albeit in horizontal a direction, of space-time.

in the present.[430] The selected method of archival research involved contextualization of the material lantern-slides within historical portrayals of the Society, its population and practices during the period c.1885-1924 collated through my research. Yet this was simultaneously a method of decontextualization in that I extracted some parts of information in order to insert these into the new narrative assemblage of my thesis. This enabled me to conceive of lantern-slide practices spatially, and dynamically in their multiple associated lecture venues where 'a localized, culture of geography was evolved'.[431] The chapters below therefore respond to the plea for archival projects to 'avoid treating these varied sites as enticing, but geographically and epistemologically isolated, systems of action and endeavor'.[432]

Measuring lantern-slide effects

To access records of how lantern-slides shaped audiences and knowledge in the geographical projections spaces of the RGS, I adapted methods of contextual analysis employed by visual historians, historians of geography and visual anthropology.[433] Scholars of the visual have informed more general understandings of archives of diverse materials.[434] I sought to transcend the analysis of iconographic representation, that has dominated

[430] Driver, *Geography Militant,* 10.
[431] Lorimer and Spedding, Excavating geography's hidden spaces, 298.
[432] Lorimer and Spedding, Excavating geography's hidden spaces, 297.
[433] 'Theoretical frameworks' in M. Dikovitskaya, *Visual Culture: The Study of the Visual After The Cultural Turn*, The MIT Press, 2006, 47-84; G. Rose, *Visual Methodologies: An Introduction To Researching With Visual Materials*, SAGE, 2011; L. J. Jordanova, *The look of the past: visual and material evidence in historical practice*, Cambridge University Press, 2012.
[434] G. Rose, Practicing photography: an archive, a study, some photographs and a researcher, (2000); Ryan, *Picturing Empire*; Edwards, Making histories, 34; Rose, *Visual Methodologies*; Jordanova, *The Look Of The Past: Visual And Material Evidence In Historical Practice*.

the RGS visual archive studies.[435] Consequently, I adopted visual anthropologists' emphasis on 'presentational forms,' that is the social contexts and 'discursive spaces' in which meaning is attributed to images and which here comprise the lantern-slide lectures or geographical projections space, such as those advocated by Krauss, Tucker, Edwards, Rose and Jordanova.[436] Such perspectives facilitate a spatially-inflected understanding of the material assemblages of humans, in this case of past lecturers and audiences, those who practiced and popularized science, and those who coalesced around lantern-slides in knowledge making performances. This approach further serves to set scholars of visual studies' concern with power within a broader thematic assemblage.

Historians of technology and photography such as Tucker have recognized the importance of reconciling historical visual media with their historical contexts of display.[437] As the task has not yet been undertaken in relation to the RGS collections I situated the local historical production of geographical knowledge via the discursive media of lantern-slides with their associated published lectures in the RGS journals, the *Proceedings of the Royal Geographical Society* and the *Geographical Journal*. In doing so I followed Driver in his concern 'less with exploration narratives themselves than with the ways in which they were produced and consumed.'[438] I was interested here in consumption *as* production of meaning, aesthetic and practice. Moreover I was concerned not just with communication and

[435] Ryan, *Picturing Empire*; Ryan, Photography, visual revolutions and Victorian geography; E. Edwards, Material beings: objecthood and ethnographic photographs*, Visual Studies 17 (1),* (2002), 1–15; Jones, Local knowledge & indigenous agency in the history of exploration.
[436] Krauss, Photography's discursive spaces: landscape/view, 311-319; Edwards, Making Histories, 67; Tucker, The historian, the picture and the archive, *Isis* 97 (1), (March 2006), 117.
111-120; Rose, *Visual methodologies*; Jordanova, *The look of the past.*
[437] Tucker, The historian, the picture and the archive, 111-120.
[438] Driver, *Geography Militant,* 8.

reception, conceived as binaries in a fixed sequence, but as concomitant equals within a shared chiastic knowledge making process. I therefore focused on lantern-slide circulation and audience responses to lantern-slides within lectures. At this point I drew from Withers's interest in the 'cognitive content, with the related reception' of published and edited lectures and discussions in the *Proceedings of the Royal Geographical Society and Monthly Record of Geography* and the *Geographical Journal*.[439] Such evidence can be processed so as 'to reveal something not just of what was said and by whom, but how it was said, and to what purposes, and, even, to learn something of the reaction from the different audiences in question.'[440] Nevertheless, as Withers conceded, by adopting this focus on spoken papers, and performances of both lecturers and audiences as a method, 'there are interpretive dangers'.[441] For example, 'Published reports in professional journals do not declare the personal interests and status of the reporters. By convention, reports on science did not always see it as necessary to comment upon the rhetorical style of the scientists and commented only occasionally upon the reaction of the audience.'[442] By adopting a method focused on the audience responses to the RGS lantern-slide lectures I was able, by process of inversion, to assemble a partial record of some of the historical uses and effects of the lantern-slides that identified the recorded, transcribed and edited and therefore partial, vocal responses of audiences to specific sets of lantern-slides and lectures. This then suggested the collective and discursive production of geographical

[439] C. W. J. Withers, Scale and Geographies of Civic Science: Practice and Experience in the Meetings of the British Association for the Advancement of Science in Britain and in Ireland, c. 1845-1900 in Livingstone and Withers (Eds), *Geographies of Nineteenth-Century Science*, 107.
[440] Withers, Scale and Geographies of Civic Science, 112.
[441] Withers, Scale and Geographies of Civic Science, 112.
[442] Withers, Scale and Geographies of Civic Science, 112.

knowledge around lantern-slide projections. This method bypassed the need for me to provide and aesthetic description of the extant lantern-slides. Given that many of the original RGS lantern-slides were destroyed (see Chapter 4) and that the journals reproduce few of the maps or images projected during lectures such an approach was important. Additionally, the method foregrounds historical audiences' recorded reactions and aesthetic understandings of the lantern-slide projections experienced, and the words they chose to express their reactions, rather than *my* interpretation of those images. I take the view that the description of a projected or light-box illuminated lantern-slide or set of lantern-slides comprises selective vision. Description thus constitutes an act of interpretation in which perceived elements are privileged or omitted, sequenced and scaled. Description is thus an act of creation in its identification of elements of the image and/or surface of the slide, and the relationships posited between these elements. An infinite number of sequences of relationships might be conceived. Yet such sequences, and the infinite range of potential meanings they might engender, are open ended and particular to the historical geographical setting of viewers. The meaning of a given lantern-slide is never fixed, inherent or self-evident, but is instead the result of an externally-situated projection from the viewer.

The process of visualization involved not only the projection of lantern-slides in lecture spaces. Instead the study underscores the relationship between the adoption of the lantern and the visualization, and indeed cultivation of new audiences in new locations, by the Society. Here it is necessary to acknowledge that the principal source of this study, the lectures and post-lecture discussions that were edited and published in the

Proceedings and the *GJ* cannot be taken as direct accounts of lectures. What we see in the published accounts of lantern-slide lectures and discussions is only partial and mediated via different conceptual lenses and physiological processes, notably by the 'mindful' eye and hand of the journal editor.[443] The role of editor necessitated one eye on the tastes and needs of two dispersed audiences: the RGS Fellows, and another on the far broader readership beyond the Fellowship. The editor's view presented in the journal, was thus created via a process of parallax. The geographical projections assemblage is therefore defined as much by the lantern-slide lectures as by the published representations of them and their intended readership.

In addition to the accounts of lectures and discussions in the RGS's journal, the geographical projections assemblage was remediated into the lantern-slide indexing systems. The lantern-slide indexes were successively re-organized to meet the changing needs of a growing community of geography teachers and students desirous to hire slides, and within the wider environment of disciplinary specialization at the tail end of the nineteenth century and first decades of the twentieth century. The visual literacy of RGS Fellows increased concomitantly with lantern-slide projections. Over the period of this study the RGS lantern-slide collections expanded through purchases by the Society and gifts to it; from c. 548 by the end of the 1880s to c. 48 523 by 1960.

Finally, the spatial model of lectures and associated lantern-slides assembled in the databases brought out the extensive personal and institutional networks through which lantern-slides were circulated within

[443] L. Roberts, S. Schaffer, P. Dear (Eds), *The Mindful Hand: Inquiry and invention from the late Renaissance to early industrialization*, Royal Netherlands Academy of Arts and Sciences, Edita KNAW, 2007.

and without the Society. This demonstrated the number of physical sites in which the RGS held lantern-slide lectures adapted to diverse audiences and the communication of geography in multiple visual and verbal registers. There was therefore a geography of RGS geographical projections spaces. However, this spatial model, which highlighted space for space's sake, had severe limits. It impeded an understanding of the reception of lantern-slides or their perceived effects by past audiences, as Withers has argued.[444] There is thus an ethical dimension to this study, which pertains to the RGS's past lantern-slide lecture practices and to a longer tradition in both exploration and geography education of acknowledging the impact of space and place in perception and thus the plural and contingent nature of vision. Critical to this understanding then is the importance of effect, in this case aesthetic, technology-mediated effects of lantern-slides within particular historical-geographical contexts. Via a process of cross-examination I collapsed the spatial model in order to bring out the commonalities between types of lantern-slide lecture and between those who gave, and those who attended, lectures. This method of synthesis highlighted the shared lantern-slide practices, lecturers, and lantern-slide effects evidenced through recorded audience responses, that transgressed the spaces of lantern-slide practice. This further demonstrated the mutual-constitution of the diverse RGS 'interpretive communities' of staff, lecturers and audiences, and of non-expert Fellows, 'practitioners of science' and 'popularizers of science' and, significantly, their joint roles in knowledge making.[445] This attested to the significance of the lantern-slides and associated lectures in the Society's attempts to maintain an institutional imbrication and simultaneous

[444] Withers, *Geography and science in Britain, 1831-1939,* 2.
[445] Fish, *Is there a text in this class?*, 170 in Keighren *Reading the reception of Ellen Churchill Semple's Influences of geographic environment (1911),* 27-28.

unity and diversity amongst the RGS Fellowship in its responses to lantern-projected images of geographical subjects.

Historians of geography have become sensitive to science's forms of communication, technologies, narrative structure and tropes.[446] Storytelling as both a historical subject and a methodology has emerged out of existing research in historical geography and other disciplines. Its emergence is also a response to the limitations of the discursive and cultural turns and the concern with new historical geographical actors, small and local stories, affect and embodiment.[447] Nevertheless, such studies of RGS practices have mainly focused on text (albeit how it is constructed through social and spatial performances), often omitting the nuances of oral and visual communication, and particularly how these create the stock images and phrases, short-cut clichés and archetypes of individual and collective geographical imaginations. [448] Accordingly geography's situated performances and micro practices are now at the fore of research.[449] 'Gestures, movements, sounds etc.' Lorimer and Spedding foresaw, could 'define a non-representational realm that promises to resuscitate method in

[446] A. Bonnett, Geography as the World Discipline, 55-63; Lorimer, Telling small stories: spaces of knowledge and the practice of geography, 197–217; H. Lorimer, Memoirs for the Earth: Jacquetta Hawkes's literary experiments in deep time. *Cultural Geographies*, 19 (1), (2012) pp. 87-106; E. Cameron, New geographies of story and storytelling –Carleton University, Canada New geographies of story and storytelling, *Progress in Human Geography* 36(5), 573–592; C. DeSilvey, Making sense of transience: an anticipatory history, 2012, 31–54; F. MacDonald, The ruins of Erskine Beveridge, *Transactions of the Institute of British Geographers* 39 (4), (October 2014), 477-489.

[447] Lorimer, Telling small stories: spaces of knowledge and the practice of geography, 197–217; E. Cameron, New geographies of story and storytelling –Carleton University, Canada New geographies of story and storytelling, 573–592; C. DeSilvey, Making sense of transience: an anticipatory history, 2012, 31–54; F. MacDonald, The ruins of Erskine Beveridge, *Transactions of the Institute of British Geographers* 39 (4), (October 2014), 477-489.

[448] Ryan starts to get at this idea in stating that 'the camera facilitated a mode of geographical observation whereby complex environments were visualized in terms of discrete categories, such as "scenery" or "human types". Photography was thus quickly accommodated into geographical science's overarching theory of knowledge based upon creating an ever expanding and comprehensive visualization of the world.' (Ryan, Photography, visual revolutions and Victorian geography, 229).

[449] Dewsbury and Naylor Practicing geographical knowledge, 253 – 260.

geography so providing us with new tools to motivate fresh investigation of its history and philosophy.'[450] The transcribed, edited and published RGS lectures and discussions that followed them enable a degree of access to such experiences of geographical knowledge. Embodied, multi-sensual experiences of knowing that were evidenced in responses to visual media such as lantern-slides fall amongst these micro practices. The multiple 'everyday practices of seeing and showing' have been given spatial and social definition by geographers studying present day behaviours, but they have not been scrutinized either within the context of the RGS, nor that of lantern-slides.[451] Recent studies of lantern-slide lecture performances are therefore useful starting points for redressing this.[452]

Experimenting with methods of observation and ways of knowing

Historical geographers have encouraged an awareness of the dynamics of 'the practices of being in the archive'.[453] Moreover, the role of technologies in mediating everyday visuality in the archive, or other spaces, has also been acknowledged.[454] Scholars have suggested that the archive is a site 'where specific interpretations of its key epistemological debates have been translated for successive … audiences'. [455] Throughout this study,

[450] N. J. Thrift, Spatial formations, SAGE, 1997; N. J. Thrift and J. D. Dewsbury, Dead Geographies and How To Make Them Live, *Environment and Planning D; Society and Space*, (2000) 18, 411-32 in Lorimer and Spedding, Excavating geography's hidden spaces, 299.
[451] W. J. T. Mitchell, Showing seeing: a critique of visual culture, *Journal of Visual Culture* 1, (2002), 170 in D. Bissell, Visualising everyday geographies: practices of vision through travel-time, *Transactions of the Institute of British Geographers* 34 (1), (2009), 44.
[452] R. Crangle, "Next Slide Please", 39 – 47 in Abel and Altman (Eds), *The Sounds of Early Cinema*; Kember, *Marketing Modernity.*
[453] G. Rose, Practicing photography: an archive, a study, some photographs and a researcher, *Journal of Historical Geography* 26 (4), (2000), 555-71; Withers, Constructing 'the geographical archive, 303; Lorimer and Spedding, Excavating geography's hidden spaces, 294-302; Dewsbury and Naylor Practicing geographical knowledge, 253 – 260.
[454] Bissell, 2009, Visualising everyday geographies: practices of vision through travel-time, 42.
[455] Lorimer and Spedding, Excavating geography's hidden spaces, 298.

understanding the lantern-slide collections and their associated archival sources, and my attempt to translate these into the academic language of historical geography, involved my physical engagement with lantern-slides by manual handling and visual observation of individual lantern-slides and both complete and partial lantern-slide sets. This enabled me to elaborate a broad picture of the subjects and iconographic genres to which RGS audiences were exposed in lectures.

Historical geographers assert that practices of 'observation, experiment, testing, confirmation, replication, interpretation and presentation' are imbricated in the presentation of knowledge in public spaces and in sites of experiment such as the archive.[456] As I was neither a geographer or a historian when I started this project, it could therefore be inferred that I was in fact starting from what Shapin called a 'view from nowhere'.[457] Despite this scholars other than Lévi-Strauss have argued for the value of distance, amongst them, Latour.[458] Consequently, the study's practices relate to those of experimental philosophy, notably those in which the sensory processes of seeing and feeling are simultaneously knowing and thinking.[459] Here the experimental nature of 'assemblage' thinking, recognized by scholars, is of particular relevance to what I have suggested is the experimental methodology deployed here.[460]

Nevertheless, I approached the study with an awareness that conceiving constitutes a first wave of interpretation and that handling

[456] Dewsbury and Naylor, Practicing geographical knowledge, 258.
[457] S. Shapin, Placing the view from nowhere: historical and sociological problems in the location of science, *Transactions of the Institute of British Geographers*, (1998), 5-12.
[458] B. Latour, *On The Modern Cult of The Factish Gods*, Duke University Press, 2010, 103.
[459] Latour, Visualisation and cognition*, 1 – 40;* Galison, *Image and Logic,* 1-7; B. Latour, *Pandora's Hope, Essays on The Reality of Science Studies,* Harvard University Press, 1999, 113-144; Vermeir, The magic of the magic lantern (1660–1700);
Golinski, *Making Natural Knowledge*, 29.
[460] B. Anderson, M. Kearnes, C. McFarlane, D. Swanton, 'On assemblages and geography', *Dialogues in Human Geography*, (2012), 2 (2), 173.

comprises selection and interpretation. Galison channelled Hacking in stating that 'there is a momentum and motivation to experimentation that is not enslaved to theory; experiments have goals that differ from merely checking theories (though they certainly do that too)'.[461] "experiments have a life of their own", he quoted.[462] Positing a duality between theorizing and experimentation, Galison iterated the dichotomy between the cabinet, or study, and the field that numerous historical geographical studies have scrutinized on varying scales.[463] To my mind the AHRC Collaborative Doctoral Award scheme, in its ambition to bridge the voids between centres of academic learning such as universities and research institutions mirrors these studies. This is particularly the case in its valorization of life-long learning and recognition that knowledge makers come from all walks of life rather than simply consisting of those who have stayed on a narrow academic path. As an academic migrant I found myself in the position of learning a new language and new ways of seeing. The PhD process involved my initiation into a new identity. Thus an experimental empirical inductive method undergirds this study since no previous historical geography has yet established a methodology for analyzing lantern-slides.[464] Nor are there any studies of single, large lantern-slide collections associated with a single institution, nor studies that situate lantern-slides in relation to academic geographical discourses, nor an established best practice on which to model my research. The study thus constituted an exercise in establishing how most usefully to observe the lantern-slide

[461] Galison, *Image and Logic,* 8.
[462] I. Hacking, *Representing and Intervening*, 1983, 150 in Galison, *Image and Logic,* 8 and 135-146.
[463] Driver, Geography Militant; Withers, Science, scientific instruments and questions of method in nineteenth-century British geography, 167-179.
[464] Schaffer, *From Physics To Anthropology – And Back Again*.

collections. This involved deciding where most productively to locate myself in order to answer the research questions and what I perceived to be the potential of the lantern-slide collections to inform the project's theoretical base. I therefore used the lantern-slide collections as a tool for learning to practise historical geography. The study has been an exercise in learning to conceive along spatial and temporal axes and in synthesizing the two so as to apprehend transformations in, and across, time and space.

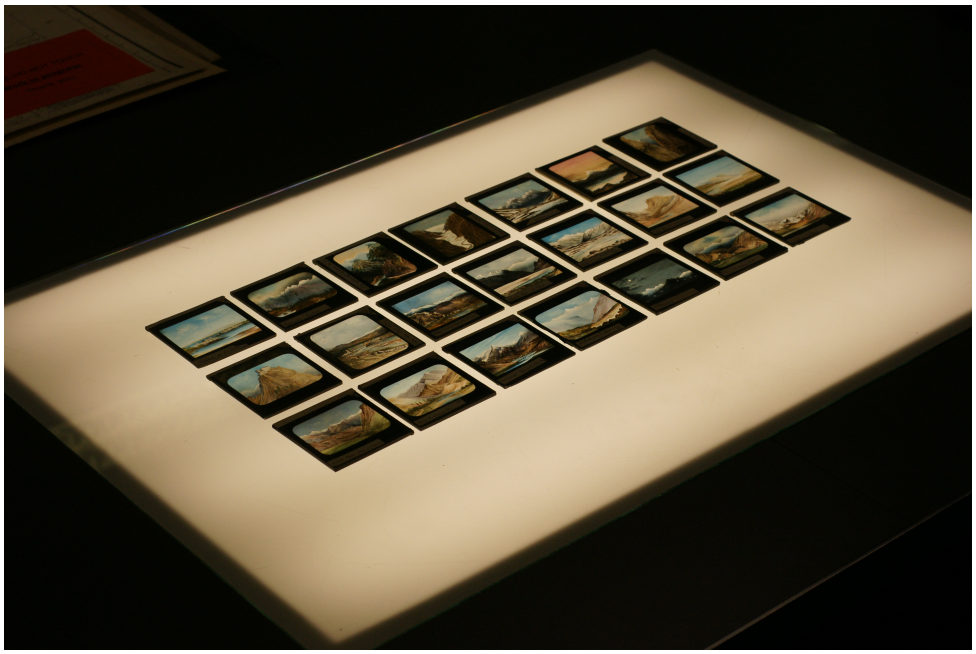

Figure 14. RGS-IBG light box displaying lantern-slide set 122. (RGS-IBG) Used with permission of the publisher.

A further experimental aspect was my viewing of lantern-slides on a light box and with a lantern so as to observe the lantern-slides across a spectrum of scales, engage with their materialities, and consider the effects engendered by locating myself at varying proximities and distances from the

lantern-slides and their projected forms (Figure 14).[465] Early in my study I viewed two sets of lantern-slides with a lantern and considered undertaking detailed iconographic analysis of individual sets of lantern-slides and images. However, I rapidly abandoned this method. It was too time consuming and it would not permit me to respond to the research questions, or gain a sense of the broader features of the collections as they changed over time, nor of the conditions in which the lantern-slides and associated lectures were produced, nor how they were interpreted by historical audiences. Subsequently I viewed just under 1800 lantern-slide sets associated with the Society's historical lectures on the RGS Foyle Reading Room light-boxes.

In concluding this section on methods and sources, a final point about the nature of the AHRC Collaborative Doctoral Award PhD scheme is worth making. Located as I was for the best part of three years close to the archives in the RGS-IBG Foyle reading room, I could engage extensively with a single institution and collection. Such a privilege is afforded to few scholars. This immersive experience enabled multiple and extensive explorations of the lantern-slides and contingent textual and manuscript archives. Given that the RGS-IBG is estimated to hold approximately 20 000 individual lantern-slides, and the stated aims of the CDA project, both the proximity and longevity of my engagement with the collection are justified. It also afforded reflection upon the continuities and disjunctures between the past and present practices of the Society. To my knowledge no other lantern-slide collection has been surveyed and portrayed from its inception to, what might arguably be conceived of, its demise in the way

[465] della Dora, Putting the world into a box, 287-306.

undertaken by this study. The very location of my research facilitated interaction with the RGS-IBG staff working with the lantern-slides and other collections. The process of this doctoral research was therefore collaborative, to varying degrees, at different times and with different members of staff. The research and retrieval of information was thus beneficial in bringing to light the lantern-slides to myself and the Society's staff. Over the period of this study, and as Joy Wheeler of the RGS-IBG Picture Library transferred the lantern-slide catalogue online, lantern-slides featured in more and more RGS-IBG materials displays. My own enthusiasm for my research, expressed in personal encounters, has also promoted a wider awareness of the lantern-slide collections beyond the Society and community of historical geographers to scholars in other disciplines and professionals in other sectors. Yet whilst the Society receives a steady stream of visitors, including Fellows, academics and other researchers to the archives and collections, the decision to base myself at the Society inevitably meant that I was not interacting with as wide an array of scholarly interests as I would have done had I been located in a university department on a daily basis. Consequently, the exchange of ideas and socialization within the communities of the London Group of Historical Geographers and other London seminar groups, and attendance at conferences, were all the more important.

Conclusion

The empirical chapters below draw on the literature review presented in chapter 2. Employing the methodology and RGS-IBG sources outlined above, and framed by the research questions about the adoption,

resistance, circulation and affects of lantern and lantern-slide use at the RGS, the subsequent chapters present a number of historical geographical facets of the RGS lantern-slide collections. Chapter 4, the key to the remaining empirical chapters, bridges the theoretical and methodological concerns and sources studied by presenting a historical geographical portrait of the RGS lantern-slide collections.

CHAPTER 4. A HISTORICAL GEOGRAPHICAL PORTRAIT OF THE RGS LANTERN-SLIDE COLLECTIONS

Introduction

This chapter discusses the RGS lantern-slide collections in relation to archive studies. It outlines the broad phases of evolution of the lantern-slide collection, the individuals and the 'interpretive communities' associated with lantern-slides, and the reasons for changing associated practices between c.1885-1960.[466] I map the circulation of lantern-slides through the physical 'discursive spaces' of the RGS across this period.[467] I demonstrate how the overlooked figures of the Map Room Curators, volunteers at the RGS, the projectionist and lantern-slide maker, and communities beyond the Society's Fellowship all shaped the RGS's lantern-slide collections and practices. Consequently, the chapter challenges existing notions of power as embodied in the form of the President, senior RGS officer, 'practitioners of science' and dominant material forms of knowledge and conceptions of space.[468] Instead it suggests that power is more widely distributed and collectively constructed between diverse human and material assemblages.

Historical geographers have re-scaled the notion of 'the field' and relocated it to the site of the archive.[469] I adopt this approach to study the RGS's c.20 000 lantern-slides. Latterly historical geographers have become desirous to see studies that are more inclusive of diverse spaces, materials, social constituencies such as gendered, age, indigenous and collective groups. The lantern-slide collections can also be classed as 'less formal

[466] Fish, *Is there a text in this class?, 170* in Keighren *Reading the reception of Ellen Churchill Semple's Influences of geographic environment (1911),* 27-28.
[467] Krauss, Photography's discursive spaces: landscape/view, 311-319; Edwards, Making Histories, 67.
[468] Lightman, *Victorian Popularizers of Science,* 10-13.
[469] F. Driver, Distance and Disturbance: Travel, Exploration and Knowledge in the Nineteenth Century, *Transactions of the Royal Historical Society* 14, (2004), 73-92.

types of documentation' of the sort that historical geographers have had their eye on for some time, and that they have been concerned to bring to the fore of their discipline.[470] Additionally, as Foucault reasoned, archives could be 'maintained or blurred in accordance with specific regularities.'[471] Further insights come from Osborne's vision of an archive as 'a bottom-line resource in the carving-out of claims to disciplinarity'.[472] This chapter and the subsequent ones suggest that the construction of the lantern-slide collections was indeed closely imbricated in the development of the RGS as an institution and what was historically conceived as the epistemology of the discipline of geography from c.1886 onwards. In line with this, the lantern-slides can be understood as material and visual analogues of geographical ways of thinking, concepts and practices. Below I discuss some recent literature regarding the role, function and potential of archives and relate it to my research questions.

Here Latour's notion of a 'centre of calculation' is apposite.[473] A number of historical geographers have problematized understandings of the term 'calculation'.[474] Withers insisted that 'there is less likely to be calculation as such than a certain art of deposition, preservation' in the site.[475] Withers's understanding of 'calculation' is nevertheless just one of the word's many potential definitions; we could also opt for the definition of 'calculation' in which probabilities, rather than fixed numbers and precise

[470] Lorimer and Spedding, Excavating geography's hidden spaces, 294.
[471] M. Foucault, *The Archaeology of Knowledge*, Tavistock, 1972, 129 in C. W. J. Withers, Constructing 'the geographical archive', 304.
[472] T. Osborne, The ordinariness of the archive, *History of the Human Sciences*, 12, 51-64, 1999 in C. W. J. Withers, Constructing 'the geographical archive', 305.
[473] Latour, *Science in Action*, 215-257; Latour, Visualisation and cognition, 1-33 in Osborne, The ordinariness of the archive, 52 in Withers, Constructing 'the geographical archive', 304.
[474] Driver, *Geography Militant,* 29.
[475] Osborne, The ordinariness of the archive, 52 in Withers, Constructing 'the geographical archive', 304.

activities, are dealt with then the term alludes to activities based on uncertainties, approximations and negotiations, that are more pertinent to understandings of archival practices.[476] This view brings us closer to Withers' understanding of an archive as a 'centre of interpretation'.[477] Interpretation that takes place by the production of new images in the researchers' mind, through the writing or typing of text, and in fact through the arrangement of materials (physically or their virtual renderings on the screen). Driver also debated the Latourian concept of 'centre of calculation' to understand the institution of the RGS, but concluded that the Society was more akin to an 'information exchange'.[478]

Reflection upon Withers' vision of the archive as the locus of 'the art of deposition' is also warranted.[479] The RGS lantern-slide archive was, as I show in Chapter 5, collectively produced my multiple hands, eyes and minds.[480] The collections comprise lantern-slides purchased by the RGS and lantern-slides donated to the Society, by its Fellows, their families and friends as well as other knowledge-making institutions. The collective nature of the Society's body of lantern-slides can be framed in relation to the collaborative productions of mandalas, temporary artworks of 'sacred maps' that are visions of the cosmos, by slow and careful deposit of coloured grains of sand.[481] As I show, below, the process of lantern-slide deposition involved preservation, but also culminated in destruction, or iconoclasm.[482]

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[476] OED entry for 'Calculation'. Accessed 27/01/2016: http://www.oed.com/view/Entry/26265?redirectedFrom=calculation#eid.
[477] Withers, Constructing 'the geographical archive', 304.
[478] Driver, *Geography Militant,* 36-37.
[479] Withers, Constructing 'the geographical archive', 304.
[480] See Distributor: Indiana University Instructional Support Services, How to make handmade lantern slides, 1947https://www.youtube.com/watch?v=YTQpYrrBbr8 (accessed 12.02. 2016) for a film of mid-twentieth-century methods of lantern-slide production.
[481] R. Frick, Samsara (film), 2011, https://www.youtube.com/watch?v=4TrvRe9hMN0 (accessed 12.02. 2016); V. della Dora, Windows on heaven (and earth): the poetics and politics of post-Byzantine "cartographic icons," *Journal of Medieval Religious Cultures* 38

Tucker has latterly provided an account of the 'pictorial turn' in histories of science.[483] In contrast to the above studies, Tucker focused specifically on the uses and potential of picture archives. She advocated plurality and a greater recognition of the heterogeneity of images and the embrace of 'the different circumstances of their production, and the variety of cultural and social functions they serve.'[484] The construction of picture collections can, she averred, elucidate the historical mechanisms that engender framings of images as either 'artistic', 'scientific' or 'unscientific' by science and its multiple publics.[485] The lack of critical awareness of the circumstances of the physical and material images production prompted her vision of an alternative methodology that would provide 'different research techniques from those that have become established for the study of scientific publications, newspapers, and books' and in order to extract 'information about the symbolic forms, language, strategies, and contexts of visual images' [486] The chapters below draw on Tucker in order to bridge this gap. In discussing the overall composition of the lantern-slide collections I suggest that all of these theoretical positions pertain to the historical processes by which the collections came to be formed. These I assess below.

Chronology

(1), (2012), 90.
[482] Latour, *Pandora's Hope, Essays on The Reality of Science Studies,* 266-292; Schaffer, *The devices of iconoclasm*, 498-515.
[483] W. J. T. Mitchell in 'An interview with W.J. T. Mitchell' in M. Dikovitskaya, *Visual Culture: The Study of the Visual After The Cultural Turn*, The MIT Press, 2006, 248;Ryan, *Picturing Empire;* B. Lightman, The visual theology of Victorian popularizers of science: from reverent eye to chemical retina, *Isis* 91 (4), (Dec., 2000), 651-680; J. Tucker, The historian, the picture, and the archive, FOCUS - *ISIS* 97 (1), (2006), 113.
[484] Tucker, The historian, the picture, and the archive, 111.
[485] Tucker, The historian, the picture, and the archive, 111-12.
[486] Tucker, The historian, the picture, and the archive, 111.

Here I provide a chronological overview of the lantern-slide collections of the RGS from the adoption of the lantern in 1886 to its phasing out in the mid-twentieth century. In their formation the collections were plural, composite and collectively produced; lantern-slides were accrued from multiple sources and from both individuals and institutions. Nor are the collections limited to the lantern-slides. The lantern-slide archive can be understood as relating to photographs, maps, objects, journal publications and correspondence throughout the RGS collections. Even today the processes of deposition and erosion are ongoing as new slides are added and, almost certainly, the investigations of researchers such as myself contribute to the entropy of the collections; the glass plates can come apart or crack in the removal from boxes and handling, fragile paper labels lose their glue, fracture and fragment. The lantern-slide collections were formed interactively and collectively through deposition, as Withers posited, but also by della Dora who likened the formation of artworks to the production of mandalas.[487] Equally, I would argue that the formation of the collections involved processes of dissemination and destruction akin to those framed by Latour in relation to iconophilia and iconoclash.[488] In the course of this study the collections have continued to be a site of ongoing processes of creation and entropy and expansion and retraction. Thus it never was, and still is not, 'a static store of documentation.'[489] Below I outline the internal composition of the lantern-slide collections. Whilst one could draw upon varying criteria to periodize lantern-slide use, here the numbers of lantern-

[487] V. della Dora, Windows on Heaven (and Earth): The Poetics and Politics of Post-Byzantine "Cartographic Icons", *Journal of Medieval Religious Cultures*, Vol. 38 (1), (2012), 84-112.
[488] Latour, How to be iconophilic in art, science and religion in in Jones and Galison (Eds), *Picturing Science Producing Art*, 418-440; B. Latour (Ed), *Iconoclash*, ZKM/Centre for Art and Media, Karlsruhe, Germany and Massachusetts Institute of Technology; B. Latour, *On the Modern Cult of The Factish Gods*, Duke University Press, 2010.
[489] Lorimer and Spedding, Excavating geography's hidden spaces, 298.

slides are focused on in order to identity the medium's temporal scope and the peak periods of accession, purchase and donation. This provides a picture of the period in which the medium circulated within the Society. It also dates the archiving and phasing out of the medium. While the lantern-slide index cards frequently record accession or purchase dates, the cards are organized in author, geographical/regional or subject order, rather than in strict chronological order. Dates of accession were not systematically recorded on the cards. I have therefore drawn upon other sources, explained in Chapter 3, notably the extant RGS Annual Council Reports and RGS Committee Minute Books, especially those of the Finance Committee, for the accession and purchase data presented here.

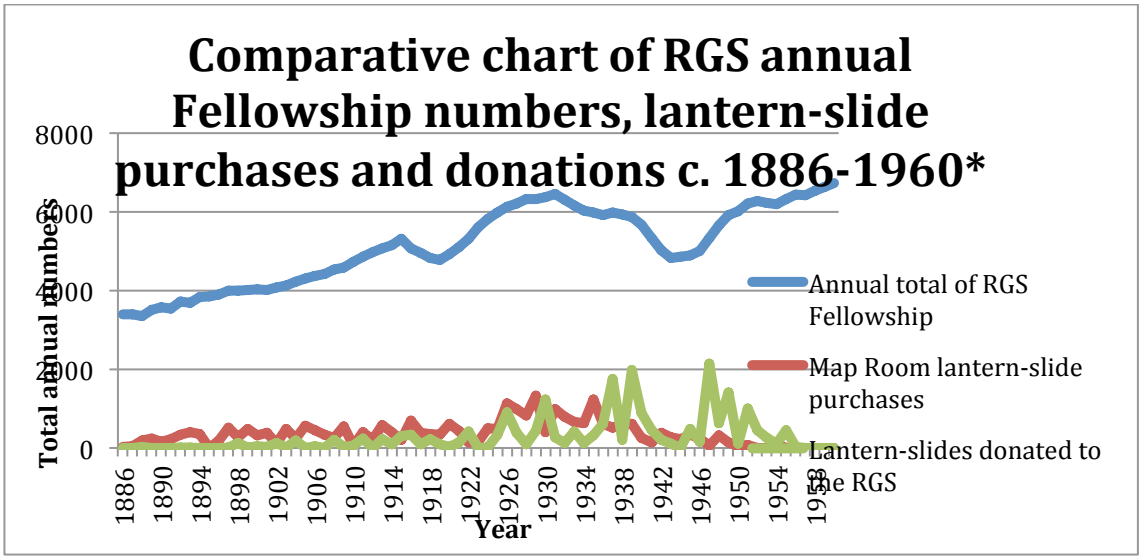

Figure 15. Comparative chart of RGS annual Fellowship numbers, lantern-slide purchases and donations c. 1886-1960.[490]

Figure 15 above shows that the era of lantern-slide use within the Society's activities ran from c. 1886 to c. 1955. The Society first purchased

[490] There are discrepancies and overlaps in the Fellowship figures between the sources used (RGS Annual Council Reports, Years Books and Anniversary Meeting lectures published in *Proceedings*). See also Mill, *One Hundred Years of the Royal Geographical Society*, 1930 for a graph of the Fellowship numbers c.1830-1930.

a set of lantern-slides in 1886.[491] Initially, the RGS seems to have purchased lantern-slides and later in 1889 made provision for lantern-slide accessions, ie. donations from Fellows.[492] It was, however, not until the Society had purchased its own lantern in 1890, further discussed below in Chapter 5, that the use of lantern-slides on a regular basis really took off.[493] From then on the projected image became synchronised with the themes described by the spoken words of lectures. By 1893, the revised version of *Proceedings*, re-christened the *GJ*, announced to Fellows that 'All the papers will be illustrated with the oxy-hydrogen lantern.'[494] The number of lantern-slides then rose steadily throughout the 1890s. However, a drop can be seen from c.1893. A further explanation might be found in the financial constraints suffered by the Society after 1893. When Clements Markham became President in 1893 there was a financial deficit of 'more than 1000l.' in the Society's books[495] which had been incurred, the Financial Committee Minute Books record, through overspending on 'Scientific Purposes and Education', and on meetings and publications,[496] possibly around the time of the question of the admission of women.[497] The creation of the Geographical Association (GA) in early 1893 may also have increased the

[491] The Annual Council Reports start to record the purchase of lantern-slides in 1887 (RGS ACR 1887, for the year 1886). The number of lantern-slide accessions is first given in the Anniversary Meeting of 1887, in which a summary of the Map Room in 1886 – May 1887 is detailed. This tallies with the first date recorded in the RGS Committee Minute Books in the report of a Finance Committee meeting (RGS CMB, Finance Committee meeting May 3 1886, 159-160).
[492] RGS ACR 1889.
[493] D. Middleton, Some Victorian lady travellers, *The GJ* 139 (1), (Feb., 1973), 67.
[494] Royal Geographical Society. Session 1893-4, *The GJ* 2 (5), (Nov., 1893), 2.
[495] RGS Finance Committee Minute Book, Royal Geographical Society Memorandum by the president for the Finance Committee and the Council 30th October, 1 (Inserted btw pages 131 and 132 in Minute Book).
[496] RGS Finance Committee Minute Book, Royal Geographical Society Memorandum by the president for the Finance Committee and the Council 30th October, 2 (Inserted btw pages 131 and 132 in Minute Book).
[497] RGS Finance Committee Minute Book, Royal Geographical Society Memorandum by the president for the Finance Committee and the Council 30th October, 1 (Inserted btw pages 131 and 132 in Minute Book), 2.

Society's expenses.[498] This overspend may also have resulted from the RGS's educational and scientific schemes that Markham, in his private account of the period, described as 'all the fat in the fire' and 'waste running riot'.[499] Markham was especially scornful of the appointment by Douglas Freshfield, in 1890, of Mr. Darbishire, a young Oxford graduate, as Cosmographer, to produce large scale maps, and whom Markham described as 'incompetent'.[500] Nevertheless, given the state of the Society's finances in 1892 and 1893 it may not have been a coincidence that the same year saw the founding of the RGS lantern-slide hire scheme.[501] Such lantern-slide hire schemes were common features from the late 1880s onwards of photographic clubs and religious and welfare organisations, for the purposes of enculturation.[502] Edwards and Hart, and following in their wake della Dora, have advanced that visual materials such as 'landscape-objects move 'into different spaces, following lines of passage and usage that project them through the world'.[503] Yet I would argue that they are rather perceived to move, or not, either as physical material entities or conceptually by human beings. The movement, in my view, is not innate, autonomous or self-driven, by these objects. Rather it is projected on to them by human actors or projectors.[504]

[498] RGS Committee Minute Book, Scientific Purposes and Education Committee, February 24th 1833, 87-88.
[499] C. Markham, 1904 – c. 1910, 455. See below, Chapter 10 for a discussion of the RGS London educational lectures by Mill.
[500] Markham, 1904 – 1910, 154.
[501] RGS ACR 1893; W. G. V. Balchin, *The Geographical Association: the first hundred years 1893-1993,* Geographical Association, 1993.
[502] Edwards, *The Camera as Historian*, 34, 37 and 90; Eifler, Between attraction and instruction: Lantern shows in British poor relief, 368-371.
[503] E. Edwards and J. Hart (Eds), *Photographs objects histories,* Routledge, 2004, 1-15.
[504] Future studies of the RGS lantern-slide practices and geographical projections space might refer to B. Latour, *On The Modern Cult of The Factish Gods* for further discussion of this.

Made of glass, lantern-slides were fragile. They were also transported long distances and repeatedly exposed to the lantern heat. It is thus likely that some slides incurred damage or that they were destroyed. Finally, in light of the financial restrictions suffered by the Society, it may be that either the Society, Library and Map Room Committee or individual staff members consciously chose to invest in lantern-slides that would be most widely appealing, and of use to the RGS and GA members, instead of to the smaller community of experts participating in Technical Meetings. This trend continued across the next four decades until the end of the 1930s. The 1940s then saw a decline in overall lantern-slide numbers. However, this drop is masked by the ongoing high number of lantern-slide donations. Map Room purchases of lantern-slides continued until 1954-55, [505] and accessions of lantern-slides ran until 1956.[506] Thus the era of lantern-slides within the RGS's activities can be broadly dated to the seventy years spanning c.1886 to c.1955.

Lantern-slide numbers and periodization of accessions and purchases

Figure 16 charts the total numbers of lantern-slides accessioned (i.e. purchased and donated) by the Map Room in the period c.1886 -1960. The lantern-slides accessioned in this period totaled 48,524. Of these, 27,285 were purchased, while those donated numbered slightly less at 21,239.[507] Two peaks in lantern-slide accessions occurred. Firstly, in the 1920s (when purchases reached 6607) and then in the 1930s (when purchases reached

[505] RGS ACR 1955, albeit the ACRs for 1954 and 1953 did not include lantern-slide data.
[506] These dates correlate with the ultimate references to lantern-slides in the RGS Committee Minute Books which date to 15th March 1954 when the final bill for the purchase of lantern-slides from the company Newton & Co. was recorded (RGS Committee Minute Books, Finance Committee meeting 15th March 1954, 3).
[507] Donated lantern-slides came from RGS Fellows and their families, other cultural and scientific institutions and possibly Fellow's guests and people not connected directly to the RGS.

7057). The purchases of lantern-slides fell dramatically in the 1940s and 1950s. Overall accessions reached 9393 and 14126 in the 1920s and 1930s, respectively (Figure 15.). Donations peaked in the 1930s (at 7069) and remained high into the 1940s (at 6462) before dropping steeply in the 1950s.

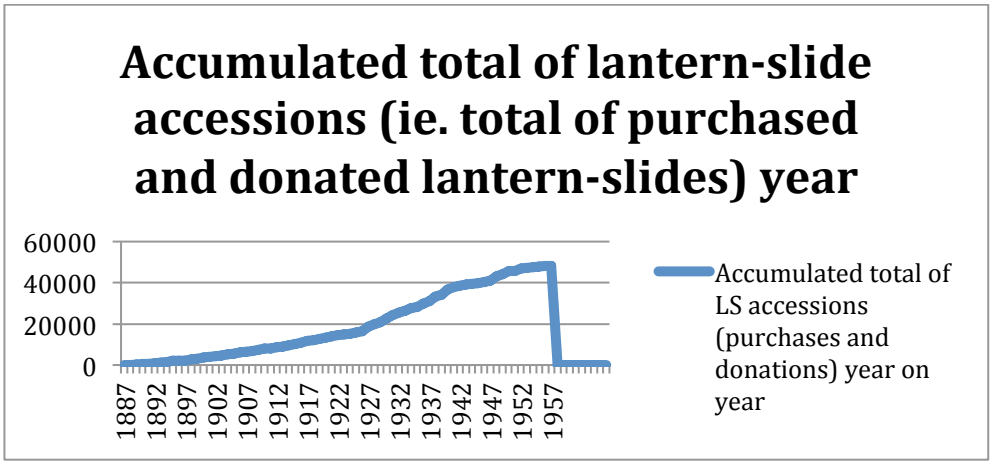

Figure 16. Accumulated total of lantern-slide accessions (ie. total of purchased and donated lantern-slides) year on year c. 1885-1960.

Figure 16 shows that lantern-slide accessions declined throughout the 1940s and 1950s. The demise of the lantern as an active medium in the Society is further evidenced by the fact that Map Room staff and assistants began to destroy parts of the lantern-slide collection in 1951 and 1953.[508] These actions signal the transformation of the lantern-slides' status, and indeed visual authority. The Society saw a transition in which lantern-slides went from that of an actively used contemporary visual medium made by, used by and produced for specific social constituencies to one in which the lantern-slides became a historical archive made by, used by, and

[508] The Map Room Curator in this period was George Mackay (-1951) and Edward E. Day (from 1951). This phase of the RGS lantern-slide collections can, in my view, also be meaningfully understood as an iconoclasm and situated in relation to Latour's work *Iconoclash* (Latour, B. *Iconoclash*, ZKM/Centre for Art and Media, Karlsruhe, Germany and Massachusetts Institute of Technology, 2002, pp. 703).

maintained for, others and for different purposes. This last phase is discussed below.

Year of lecture	Lecturer and lecture title	Term to denote lantern
1886	Cyprian Bridge's *Melanesian cruises in the Western Pacific*	Dioptric lantern and lime-light (sic)
1887	Halford Mackinder's *Scope and Methods of geography*	Dioptric lantern and lime light (sic)
1888	Douglas Freshfield's *Suanetia*	Dioptric lantern
1892	John Coles's Young Persons Christmas lectures	The lantern
1893	Announcement of future RGS lectures in *GJ* (Nov 1893)	Oxy-hydrogen lantern
1917	J.S. Keltie *Thirty years work* lecture	Slides

Figure 17. Lexicon of the RGS's adoption of the magic lantern c.1886-1917.

The above figure (Figure 17) shows the terms with which the lantern was first described in the RGS lectures, and which are discussed in the

subsequent chapters of this thesis. Given the recorded debates about the use of the lantern, the choice of the qualifying term 'dioptric' merits further scrutiny. The conjunction of 'dioptric' with 'lime light' is equally of note since 'dioptric' has strong associations with science and scientific instruments, whilst 'lime light' suggests the entertainments, described in Chapter 2, in which the lantern was used in the later nineteenth century. Thus in the first three recorded instances of lantern use the RGS, perhaps more specifically the RGS Secretary Henry Walter Bates, then editor of the *Proceedings,* was cautious about announcing the use of the lantern. This supports the idea that there was some debate about the medium, perceived to be contentious in the eyes of some. We might further surmise that this is indicative of Bates's attempts to balance the Fellowship's diverse interests and concerns. The choice of the term 'dioptric' has further implications in my view. The term 'dioptric' as defined by the OED suggests refraction.[509] Employed in association with the lantern, it may have had specifically scientific connotations. It was also employed in BAAS meetings.[510]

RGS lantern-slide chorology

Having presented above a general portrait of the lantern-slides as a collection of material objects, I now want to invert that perspective, in the manner of della Dora, by considering the physical spaces of the Society through which the lantern-slides were circulated and via which the collections came to be formed.[511]

[509] OED entry for 'dioptric': http://www.oed.com/view/Entry/53113?redirectedFrom=dioptric#eid. Accessed 01/02/2016.
[510] Withers, *Geography And Science In Britain, 1831-1939*.
[511] della Dora, Inverting Perspective.

In the mid-1980s, as Shapin stated, historians became sensitive to the importance of locality and space in shaping 'how scientific knowledge was made, how it secured credibility, how it travelled.'[512] Historians of geography have adopted a range of positions to reflect upon if, and how, space enters into knowledge-making performances. Scholars have argued that knowledge is place-dependent, and for the mutual influence of social and topographical factors upon the production of knowledge.[513] They concur that 'science', as Withers claimed, 'has a geography' that requires judiciously grounded empirical work in appropriate historical and theoretical contexts in order to be mapped and elucidated.[514] Consequently, as Livingstone anticipated, there is now 'a geography of geographical practice' that 'apprehends locational particularities'.[515] In seeking to understand the lantern's adoption, resistance to it and the effects the medium had on geographical knowledge making, I have mapped the key spaces of lantern-slide activity, followed their circulation throughout the RGS by using the comparative methodology outlined in Chapter 3 and by conceiving of the lantern-slide collection as a 'travelling landscape object'.[516] However, I join Withers in emphasizing that this 'is not to propose a crude determinism in explanation of the making of science or of geography. It is, rather, to examine the connections between geography and science as social

[512] Shapin, Placing the view from nowhere, 5-6.
[513] D. Livingstone, The spaces of knowledge: contributions towards a historical geography of science, *Environment and Planning D: Society and Space*, 13, (1995), 5 – 34; Shapin, Placing the view from nowhere, 5-6; Livingstone and Withers (Eds), *Geographies of Nineteenth-Century Science*.
[514] Withers, Towards a history of geography in the public sphere, 68 cited in Naylor, The field, the museum and the lecture hall, 494.
[515] D. Livingstone, Geographical Traditions, *Transactions of the Institute of British Geographers*, (1995), 420-22 cited in Withers and Mayhew, Rethinking 'disciplinary' history, 24.
[516] della Dora, Travelling landscape-objects, 334-354;

practices in place.'[517] Drawing from Naylor I question current notions of what a nineteenth-century scientific society was, and exactly how and where it was active. By highlighting the diversity, and geographical specificity, of institutional scientific practices and purposes within one region, Naylor deepened understandings of currents of scientific, practices and people active within a number of disciplines. He also demonstrated that this nineteenth-century inter-disciplinarity concerned spatial particularities of knowledge making.[518] Here I therefore transpose and expand Naylor's investigative framework of Penzance Natural History Antiquarian Society practices to address the changing RGS geographical projections spaces of human and non-human materials.[519] The discipline's reproduction, and thus its expansion in time and space via human and non-human mediators, such as the lantern and lantern-slides, 'depends, in part, on these circulatory processes of translation, transformation, resistance and consumption.' [520] The section below examines the Map Room practices that shaped the lantern-slide collections and details the people and places involved in the processes of allowing access to, purchasing and accessioning, storing and indexing lantern-slides.

On a daily basis the Map Room coordinated lantern-slides.[521] Ryan showed that photographs were exhibited in the Society's lectures and meetings since the mid-1850s and were, by 1890, 'firmly established as a tool of geographical exploration'.[522] Jones pointed to the display of paintings

[517] Withers, *Geography And Science In Britain, 1831-1939*, 3.
[518] Naylor, The field, the museum and the lecture hall, 494-513; Naylor, Introduction: historical geographies of science 1–12.
[519] Withers and Livingstone, Thinking geographically about nineteenth-century science, 2-3.
[520] Lorimer and Spedding, Excavating geography's hidden spaces, 300.
[521] RGS Map Room Accession books; RGS ACRs and Year Books.
[522] Ryan, Photography, visual revolutions and Victorian geography, 212, 218 and 225.

in meetings from 1854.[523] However, a decisive moment came in 1884 with Douglas Freshfield's insistence that an official Photograph Collection be founded.[524] Managed by the Map Room, which also facilitated the production, collection, co-ordination and rationaliziation of photographic forms of visual knowledge, this formalized the access to, systematization and dissemination of, photographs of a geographical nature. It also helped to define what were, and were not, images of a geographical nature. It is also worth noting that the RGS' Savile Row Map Room was an open plan space with facilities for the storage and viewing of maps below and library books stored around the walls and on a mezzanine. Within the one space the staff and materials of the Map Room and Library overlapped.

Since 1854 the Map Room had been the recipient of a Government Grant of £500 for the support of its collection of books and maps.[525] With the proviso that the public could access the Society's collections the grant continued into the late nineteenth century.[526] The extent to which the public did this is difficult to measure, but Grant-Duff's 1892-93 Presidential address suggests that 'a map collection of great size and value which is open to the public at large. During the last year about 2500 persons visited the map-room, but … we want a great deal more room, and could do much more valuable work for the public if we had it.'[527] The Map Room was therefore 'a threshold space' with public access rather than one exclusive to RGS Fellows.[528] It is not clear how far gendered exclusion debarred women from the Society's public facilities. Bell, McEwan and Madrell imply that

[523] Jones, *Local Knowledge, Indigenous Agency and the Role of Intermediaries in the History of Exploration.*
[524] Jones, Measuring the world.
[525] Mill, *The Record,* 65–7; Jones, Measuring the world, 315.
[526] RGS Year Book 1898.
[527] Mountstuart E. Grant Duff, The annual address on the progress of geography, 1892-93, *The GJ* 2 (1), (Jul., 1893), 10-11.
[528] Mukherji (Ed), *Thinking On Thresholds, The Poetics of Transitive Spaces*, 2013.

women did not have access.[529] However, from 1886 the public offices of the state were frequent users of the Map Room.[530] As the Fellowship of the RGS grew and the popularity of geography increased through the expanded and diversifying range of practitioners, the growth of geography teaching in schools and universities, the number of visitors to the Map Room increased. The gendered nature of the Fellowship, discussed below, was important too. Until the full admission of women in 1913, women, bar the 22 admitted in 1893,[531] only had access to the Society's facilities via the intermediary of male Fellows.[532]

Lantern-slide purchases and donations were deliberated by the Library and Map Committee, consisting of the Honorary Secretaries, Secretary, Map Room Curator and Librarian. Purchases were recorded from 1886.[533] In 1886, when the Society first projected lantern-slides, the Library and Map Room Committee consisted of the following: the President, Lord Aberdare; Henry Bates, the RGS Secretary; Douglas Freshfield, one of the two Honorary Secretaries from 1881-1892; John Scott Keltie, the Librarian; and John Coles the Map Curator. This Committee met approximately twice every term.[534] Reports from the Librarian and Map Room Curator were read out and purchases sanctioned or not. Whilst no Library and Map Room reports have survived for this earliest lantern-slide period, the Library and Map Committee Minutes provide glimpses of the

[529] M. Bell and C. McEwan, The Admission of Women Fellows to the Royal Geographical Society, 1892-1914; the Controversy and the Outcome, (1996), 295-312; Maddrell, *Complex Locations.*
[530] RGS ACR 1887.
[531] Bell and McEwan, The Admission of Women Fellows to the Royal Geographical Society, 1892-1914, 295-312.
[532] Maddrell, *Complex Locations,* 29.
[533] RGS ACR 1887.
[534] The committee met approximately six times each session.

purchasing and accessioning process though, at first, with minimal detail.[535] For example, the minutes for May 1929 record: 'One set of lantern-slides, four maps and three atlases were selected for purchase'.[536] The Map Room Accessions book records purchases and donations, the name of the maker or donor, the lecture the lantern-slides were associated with, as well as date, price and quantity.

From 1884 the Map Room was allocated a Photograph Account of £20 for photographs (the Library meanwhile received £200). These figures are only meaningful when presented in the wider economic context, but there is not the space here for an extensive economic history of the RGS in this critical period. It is, nevertheless, significant that in 1892 the Map Room account became overdrawn.[537] This was problematic as the Society's expenditure on photographs and lantern-slides increased. There was at this time additional expenditure in supporting Halford Mackinder's Oxford Readership, the University extension lecture scheme and other educational activities, which I elaborate on further in Chapter 6. Simultaneously, the RGS income, largely derived from the subscriptions of Fellows, fell due to the stalling of, and slight decline in, the Fellowship between 1890 and 1891 (Figure 15).[538] The unstable financial position of the RGS at this time was tied to the debate concerning the admission of women to the RGS.[539] When the question of admitting women arose in 1892 the Society's Fellowship, but also its finances and the activities these supported, were jeopardized.[540] After Grant-Duff and Freshfield's resignations, two of the main proponents

[535] There are extant reports from the 1940s.
[536] RGS Library and Map Committee Minute Book, 6th May 1929, 164.
537 RGS Library and Map Committee minutes, December 9 1892, 77.
[538] RGS ACRs 1891 and 1892.
[539] Maddrell, *Complex Locations.*
[540] Jones, Measuring the world, 317. Maddrell, *Complex Locations.*

of a more diversified Fellowship, Clements Markham assumed the presidency (1892 - 1905). [541] Closely monitoring lantern-slide and photograph expenditure, Markham personally signed off all Library and Map Room Committee minutes. Nevertheless the investment in images continued. Investment in images increased when the Finance Committee approved a £100 grant to the Library and £50 to the Map Room.[542]

The Map Room accepted lantern-slide donations from 1888. [543] Donations increased from 1892-93 when the GA was founded. [544] The Society advertised the fact that it was seeking to acquire lantern-slides in the Year Books throughout the late 1890s. From 1918 Fellows or their executors, family and friends offered the sale of lantern-slide collections to the RGS.[545] Decisions were based on collective discussion by the Library and Map Room committee of the merits of the lantern-slide images and social status of the donor.[546] These findings start to situate the RGS lantern-slides in relation to other instances of gift economies elaborated around the exchange of lantern-slides such as those identified by Edwards.[547] Driver's assertion that the Society was a site of knowledge exchange; here that is seen to have comprised visual knowledge in lantern-slide form, is also lent weight.[548]

From the 1930s not only private individuals and RGS Fellows, but other research and cultural institutes including the Courtauld and V & A

[541] RGS Library and Map Room committee minutes, 1893; C. Markham, Personal Record of The Royal Geographical Society, c. 1904 – 1912, 122.
[542] RGS Library and Map Committee minutes, October 16th 1895: 280.
[543] 'Magic lantern-slides. 40 magic lantern-slides of views in the Caucasus for Mr. Freshfield's paper. Received 14th May 1888. Purchased' Only 22 lantern-slides were purchased so presumably the others were donated by Freshfield. (Map Room Accession book 1888, 336); RGS ACR 1889.
[544] Balchin, *The Geographical Association: the first hundred years 1893-1993.*
[545] RGS Committee Minute Book Feb. 1918 – Feb. 1926: Library and Map Committee meeting 16th March, 1921, 111; Library and Map Committee meeting 29th June, 1921, 122.
[546] RGS Library and map Committee Meeting, 23rd July 1934, 128.
[547] Edwards, Making histories – The Torres Strait Expedition of 1898, 13-34.
[548] Driver, *Geography Militant,* 32.

contacted the RGS about the disposal of lantern-slides.[549] Before the RGS began to dispose of its own lantern-slides, there is evidence that other institutions were re-structuring their collections and, it seems, that some of these slides found a home at the RGS. The Society accepted a large batch of lantern-slides from the British Official Mission to U.S.A. in March 1931, some of which the RGS then presented to the Imperial War Museum in May 1953. The Canadian Government and the Japanese Embassy in London also donated lantern-slides to the RGS.[550] The particularly heavy phase of map, photography and lantern-slide accessions that followed the Second World War left the Map Room staff and assistants with a cataloguing backlog[551]. Lantern-slides ceased to be accessioned in 1957.[552]

Until the move to South Kensington in 1913 lantern-slides were housed in the Map Room and dealt with by the Map Room staff, consisting of John Coles, previously introduced, and Edward Reeves (1862-1945), the Map Room Assistant 1877-1900 and RGS Instructor in Survey and Astronomy 1900-1933. The lantern-slides were labeled and stored in wooden boxes.[553] From 1913, whilst the overall responsibility for lantern-slides remained with the Map Room staff, the slides were stored in the Photograph Room (sometimes referred to as the Exhibition Room, the present day kitchen at Lowther Lodge) and possibly in one of the basement rooms from the late 1920s.[554]

[549] When the RGS was offered 480 slides from the Courtauld Institute of Art, it decided to keep 250 at a cost of £3, which it paid from the hire of slides. See Library and map Committee, 17th July 1939, 1.
[550] See lantern-slide index cards
[551] RGS Committee Minute Book, Library and Map Committee, 26th January 1946, page 2 of report.
[552] RGS ACR 1958 (for 1957-58).
[553] RGS ACR 1912 (for year 1910-11).
[554] RGS ACR 1914.

Indexing

As scholars have posited the archive can be understood as 'a particular expression of classification as one 'way of knowing.''[555] Yet as Langford observed, institutional settings never are neutral.[556] So if the archive is the embodiment of ordered power relations, and its site imbricated in their creation, then I want to counter that this is just a veneer of order. Simultaneously potential multitudes of historical polyphony, and equally discord and disorder, reside in the archive**.**[557] As I show below the lantern-slides and their index systems can be understood as the material expression of a spectrum of changing geographical ways of seeing since there have been several, and incomplete, attempts to re-organize the lantern-slide collections. Equally, the lantern-slide archive, in its formation, and historical uses of its materials, has been a locus of doubt, plurality and often contradiction and changing meanings.

In order to make the Society's rapidly expanding image collections workable as a useful resource for the growing numbers of students, academic geographers, researchers, and school teachers, an indexing system was necessary. The lantern-slide index systems were multiple and re-organized at intervals across the period of study. They were structured alphabetically, numerically, geographically and by subject matter. In 1900 it was decided that the photographs, previously organized in boxes according to their subjects and catalogued under general headings, would be re-catalogued so that 'every photograph is entered with its title, under a series

[555] J. P. Pickstone, *Ways Of Knowing: A New History Of Science, Technology And Medicine,* Manchester University Press, 2000, 1-11, 60-82 in Withers, Constructing 'the geographical archive', 304.
[556] A. Sekula, *Photography Against The Grain*, 155 in M. Langford, *Suspended Conversations The Afterlife of Memory in Photographic Albums,* 18; G. Rose, *Visual methodologies: an introduction to researching with visual materials*, SAGE, 2012, 228.
[557] Withers, Constructing 'the geographical archive', 304.

of headings and sub-headings'.[558] The aim of this was to increase the speed of access to photos required 'for purposes of preparing slides for lectures',[559] signalling the mutual-constitution of the photograph and lantern-slide collections of the RGS and the widening geography of lantern and lantern-slide practices in geographical knowledge production. This also indicates the RGS's engagement with a growing professional body of teachers and students of geography in need of images for lantern-slides, and therewith the expansion of the community of geography beyond the RGS and its Fellows. Indeed this corresponds to the apogee of lantern lectures in Britain.[560] This move followed three significant events. Firstly, the establishment of the Readership in Geography at Oxford in 1887 as well as the School of Geography at Oxford in 1899.[561] Secondly, the opening up of the GA to teachers of geography from all schools and irrespective of their age and gender; and, thirdly, the delivery of B.B. Dickenson's lecture 'The use of the lantern-slide' at the GA in 1900.[562] This phase of lantern-slide indexing was completed by 1907 when the photograph and lantern-slide numbers were in excess of 26,000 (Figure 16.).[563]

Yet just seven years later, in 1914, a 'thorough overhaul of the collection, and the construction of a subject catalogue' was deemed necessary.[564] The impetus for this came from the shifting position of geography in relation to the human and social sciences, and changing patterns of sciences within academic institutions as human geography,

[558] Address to the Royal Geographical Society, Anniversary Meeting, May 21, 1900, 4
[559] Address to the Royal Geographical Society, Anniversary Meeting, May 21, 1900, 4.
[560] Crangle, "Next Slide Please" in Abel and Altman (Eds), *The Sounds of Early Cinema,* 39 – 47; Kember, *Marketing Modernity.*
[561] G. Kearns, *Geopolitics and empire: the legacy of Halford Mackinder, OUP,* 2009, 44-45.
[562] Balchin, *The Geographical Association*; The initiation by Halford Mackinder in 1902 of the COVIC lantern-slide project may well have been inspired by Dickenson's lecture.
[563] RGS Year Book 1907, 54.
[564] RGS ACR 1914, 10. This may have been initiated by HInks who replaced Keltie as RGS Assistant-Secretary in 1915.

anthropogeography and anthropology emerged as modern scientific disciplines. It seems no coincidence that the need for re-cataloguing the lantern-slides in relation to anthropological and geomorphological subjects arose just one year after Ellen Churchill Semple delivered her lecture on the 'Influence of Geographical Conditions upon Japanese Agriculture' at the RGS on November 14, 1912. Within the context of expanding geographies of geography the roughly regional catalogue, discussed above, was inadequate and there was 'no subject catalogue in which it is possible to find illustrations of any point of physical geography or anthropology. The want of such a subject catalogue has been felt very much.'[565] In order to do this swiftly so as not to perturb the use of the catalogue and collections of lantern-slides, the Map Room recruited additional staff. Two different tasks were to be undertaken and two different profiles of the ideal candidate for the task were drawn up: 'someone who had worked for the trade to do the repairing and labeling. […] The subject catalogue would require the services of a well-educated and trained geographer. Our aim might be to secure the assistance of someone who had been through the diploma course at Oxford or Cambridge, and had paid special attention to Geomorphology and to Anthropology.' [566] One hundred pounds was provided for the 'repair, arrangement, labeling and cataloguing of the Society's collection of Lantern-slides'.[567] This phase of indexing lasted until 1917 when the collections included c. 27000 photographs and 11000 slides.[568]

[565] AP/38, Memorandum for the Library and Map Committee 26 Feb. 1914, 1.
[566] RGS AP/38, Memorandum for the Library and Map Committee 26 February, 1914, 2-3.
[567] RGS Library and Map Committee Minutes, February 26, 1914, 205-6.
[568] RGS ACR 1918, 9.

In 1925 another phase of indexing and re-labeling was initiated.[569] The duration of this phase is uncertain. The retirement of the clerk H.W. Simpson, further assessed below, who had been the projectionist at the Evening meetings for over thirty years, since 1890, and whose departure from the Society left a considerable gap in the human store of lantern-slide skills and what Rossell called 'tacit knowledge' may have necessitated it.[570] Reeves, the former Map Room Curator, reported in 1933 that 'there has been the same rapid increase in the photographs and lantern-slides; and the cataloguing of these, and arranging sets for lectures now practically takes up the whole time of one of the assistants.'[571] Nevertheless, in 1946, Miss Campbell, a Map Room assistant, proposed that the collections be re-catalogued,[572] but despite the fact that the Society continued to use them, new visual technologies were rapidly superceding the lantern. Further events were significant to the indexing of lantern-slides. In 1912 the Society's Royal annual grant increased from £500 to £1250 on condition that the money be used for a new building and that the public had access to a Map Room. No less important was the admission of women to the Fellowship of the Society in 1913. Finally, the Society founded the Research Department, which arose out of the Research Committee and met for the first time in July 1913.

These successive phases of re-cataloguing reflect the diversity and changing nature of professional geography, practitioners and professionalizers of geography as what was deemed to be a geographical

[569] 1925 Finance Committee Minute Book, 15th December 1924'.
[570] H. W. Simpson's retirement was announced in The Monthly Record, *The GJ* 61 (5), (May, 1923), 385-392; Rossell, Demolition d'un mur, 321.
[571] Reeves, *Recollections of A Geographer,* 61.
[572] RGS Committee Minute book, Library and Map Committee, 26th January 1946, page 2 of report.

science' that was believed to be distinct from other knowledge forms was crafted.[573] The growth of a community of teachers and university lecturers of geography desirous to hire lantern-slides is also apparent. The Society's readiness to invest human and financial resources in indexing suggests the popularity of both geography and lantern-slides. Additionally, the changes to the index systems reveal the evolution and simultaneous devolution of conceptualisations of geography into regions and sub-regions. Finally, the conception of a fundamental duality at the heart of the discipline, between human and physical geography is manifest. The divergence in individual researchers' interests, and the formation of academic research departments is a reflection of the specialization conjugated by disciplinary professionalization and institutionalization. This reflects the circulation of streams of geographical thought, notably that of regionalism, that had originated from Ritter in Germany, and which exerted a strong influence on Halford Mackinder and Ellen Semple's visual conceptualizations of geography.[574]

The transformations apparent in the lantern-slide indexes reflect the synthesis, systematization and categorization of knowledge. They are testament to the shifting geographies of knowledge production, analysis and communication in and beyond the Society at the turn of the century. These shifts were engendered by changing geographies of knowledge production, the professionalization and institutionalization of science, as well as social and educational reform.[575] A European geographical community existed;

[573] Latour, *Visualisation and cognition,* 2.
[574] Keighren, *Reading the reception of Ellen Churchill Semple's Influences of geographic environment (1911).*
[575] Daunton (Ed), *The Organisation of Knowledge in Victorian Britain*; Lightman, *Victorian Popularizers Of Science;* Withers, and Mayhew, Rethinking 'disciplinary' history, 11-29; C. W. J. Withers, Scale and Geographies of Civic Science: Practice and Experience in the

the geographical societies of Europe and the British Empire gathered at regularly held international conferences.[576] The *GJ,* edited by Keltie until 1917*,* published reports from global geographical societies, especially those of European sister-societies.[577] The lantern-slides and their card index avatars represent the success of the lantern-slide medium, the diversifying demographic of consumers of geography and the expansion of geographical imaginaries. Across the period of this study geographical methods, practices and media became authorized by, and disseminated via, institutions such as the RGS. The demographic of geographical knowledge making also widened so as to include not only wealthy individuals and forces-led expeditions. Collective field-work practices of academic institutions also became the norm.[578] Newly-established universities and academics were producing geographical knowledge authenticated by different methods and values and demanding visual aids which could evidence a geographical science seeking to explain the relationship between landforms and humans.[579] In the early twentieth century exploration was more frequently undertaken by university-led expeditions and field-work across a range of field sciences, including geography and anthropology.[580] Consequently the conceptualization, organisation and categorization of knowledge changed. The period of professionalization coincided with changes in the scale of social mobilities,

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Meetings of the British Association for the Advancement of Science in Britain and in Ireland, c. 1845-1900 in Livingstone and Withers (Eds), *Geographies of Nineteenth-Century Science*, 73-98; Mannoni, *The Great Art of Light And Shadow,* 98-102.

[576] Mill, *The Record*; Withers, *Geography and science in Britain, 1831-1939.*

[577] Jones, Measuring the world.

[578] Driver, *Geography Militant*; Collier, and Inkpen, The RGS, exploration and empire and the contested nature of surveying; Jones, Measuring the world; Daunton (Ed), *The Organisation of Knowledge in Victorian Britain.*

[579] Stoddart , The RGS and the 'New Geography'; Keighren, Giving voice to geography, 198-203; Matless, Gestures around the visual, 222-226; Ryan, Who's afraid of visual culture?, 232-237.

[580] S. Naylor and J. Ryan (Eds) *New Spaces of Exploration,* I. B. Tauris, 2010.

commercial and leisure, or touristic, travellers.[581] Visual technologies such as the camera and the magic lantern shaped knowledge production and communication, and contributed to the transformation of geographical imaginations.

Della Dora's emphasis upon the embeddedness of images in 'landscape-objects' is supplied with technology-specific nuance here.[582] Individual lantern-slides were embedded in particular sets of lantern-slides, but as the phases of recataloguing suggest, these sets could be broken up and re-ordered. So 'travelling landscape-objects' theory can be projected on to the RGS collections on a number of scales; that of the individual slide and that of the set. A principle of the landscape-object theory is that they 'operate as vehicles for the circulation of places'.[583] This informs the indexicality of lantern-slides, and lantern-slide sets. The RGS lantern-slide index systems suggest that lantern-slides were, historically, perceived as having symbolic powers to stand for places around the world and conceptual ideas of the human and earth sciences. However, this can be queried since the recataloguing of the lantern-slides over time following transformations in British academic research and teaching structures and, notably, the emergence of geomorphology and anthropology in the early twentieth century as distinct fields. Lantern-slides were then vehicles for the circulation of shifting ideas of places, and from changing knowledge making places.

Yet landscape-objects, della Dora suggested, have their own 'social biography' since for her they 'change their meaning and function in the

[581] Rojek, C. *Leisure And Culture*, Macmillan, 2000; S. Potter, Empire, cultures and identities in nineteenth- and twentieth-century Britain, *History Compass* 5 (1), (2007), 53; Naylor and Ryan, *New Spaces of Exploration*.
[582] della Dora, Inverting Perspective, 334.
[583] della Dora, Inverting Perspective, 335.

course of their life and journeys, and so activate and become part of complex geographies of reception.' [584] I question the attribution of anthropomorphic free will and innate agency to landscape-objects that is implicit in this conceptualization. Lantern-slides did not have lives of their own, nor undertake journeys of their own accord through space and time. To attribute autonomous, life-like properties to lantern-slides then throws back a reflection on human beings; they, in turn, become, mere materials open to manipulation. The lantern-slides were authorized, and resisted, by human actors and set in motion by the technology of the lantern that projected the lantern-slide images. They were defined by the distance between the lantern and the screen, and by diverse social groups who viewed the projected images. Any meanings, and transformations in meanings, such as those seen here in the discussion of changes to the index systems, were attributed to lantern-slides in both their material landscape-object and projected incarnations by human actors.

The origins of the Map Drawing Office and preparation of maps have been discussed at length by Jones.[585] Yet the relationship between the Map Room and the Map Drawing Office in the production of the lantern-slide collections within this space has been overlooked. That the staff were not always up to date in the production of maps evidences the new scales of magnitude and frequency with which geography was visually communicated.[586] The 1880s and 1890s saw an expansion of the Society's activities, especially visual ones manifested in the collections, meetings and publications.

[584] della Dora, Travelling landscape-objects, 350.
[585] Jones, Measuring the world.
[586] RGS AP/32, November 18th 1890, Minutes of a meeting about the need for the Map Drawing Department to produce maps on time, page 3.

Savile Row (1886 -1913)

The connections between architectural spaces and optical instruments of an earlier era used for the purposes of visualization in teaching geography have been a long-standing disciplinary concern. Historical geographers have asserted that 'spaces here are not mute or inert, but enter into the performance in decisive ways'.[587] Here I understand the Map Room and Burlington House lecture theatre as instrumental spaces (Figures 15 and 16). In arguing that the concept of geographical projections offers new perspectives on the discipline's engagement with visual matters, I draw on existing historical studies of the lantern. Driver first signaled the importance of assessing lantern-slide use specifically in the institutional context of the RGS.[588] Rose stated that 'when geographers and images get together… effects follow'.[589] The synergy of various visual forms within the lantern lecture, and within lantern-slides, engendered significant effects. In view of this I continue to trace the historical circulation of lantern-slides throughout the RGS spaces and the participation in the geographical projections space of audiences.[590] I argue for the mediating role of the magic lantern between spaces and peoples.

[587] Driver, On geography as a visual discipline, 229; Rose, On the Need to Ask How, Exactly, Is Geography 'Visual'?; Ryan, Who's Afraid of Visual Culture?; Matless, Gestures around the Visual.
[588] Driver, *Geography Militant.*
[589] Rose, On the need to ask how, exactly, is geography 'visual'?
[590] della Dora, Travelling landscape-objects, 334-354.

Figure 18. Anonymous, photograph of the lecture room of the University of London at Burlington House on the occasion of the RGS meeting, April 28th 1902. (RGS-IBG) Used with permission of the publisher.

Figure 19. Anonymous, photograph of the RGS Savile Row Map Room, 1912. (RGS-IBG) Used with permission of the publisher.

If wider changing geographies of science had galvanized the RGS

into accommodating more fully scientific investigations of geographical phenomena and those who conducted them, then factors of geography internal to the RGS staff, 1 Savile Row building and Fellowship were no less important. Consequently, this study is positioned in relation to material culture histories of glass and light discussed above in chapter 2.[591] The help, and input, provided by the RGS staff also changed with the advent of the lantern. Whereas earlier papers were peer-reviewed by two reasonably informed RGS Fellows, the speakers at the Society's meetings also received assistance with their images from RGS staff members such as those of the Map Room, Library, the Map Drawing Office and the lantern-slide maker and projectionist, H.W. Simpson.[592] The Map Room was the principal locus of these changes. H.W. Simpson, the RGS junior clerk, lanternist and lantern-slide maker produced certain lantern-slides for the Technical meetings.[593] He likely also operated the lantern in them.[594] As stated above in Chapter 3 the Society had its own screen, acquired circa April 1888, and from 1890 a lantern, which could be transported to Burlington House or 1 Savile Row as necessary.[595]

Lantern-slides featured less frequently in Technical meetings. The proximity of maps, charts and photographs from the Society's collections,

[591] Armstrong, *Victorian Glassworlds;* Otter, *The Victorian Eye*.
[592] For more on peer-reviewing system see Jones, 'Measuring the world: exploration, empire and the reform of the Royal Geographical Society c. 1874-93'.
[593] From 1890 H.W. Simpson was acting as the projectionist at the RGS evening meetings (RGS Committee Minutes, Finance Committee meeting minutes, December 1 1890, 345), and from 1893 at the Christmas children's lectures ('H.W. Simpson, slides for Mr. Coles' lectures £14.18.9; John Coles (lectures to young people) £20.-.-', RGS Finance Committee meeting, February 3rd 1893, 85) and H.R. Mill's educational lectures at the London Institution ('Simpson H.W. Lantern + slides at Dr. Mill's lectures £7.9': RGS Committee Minutes, Finance Committee meeting minutes December 21 1893, 150) so it is likely that he also operated the lantern in the afternoon meetings too. '[…] Photo slides for £8.12.6, Special meetings £3.7.3, Operating £7.7 (Total £19.6.9) […]' in RGS Committee Minute Books, Finance Committee minutes July 3 1895, page 274).
[594] RGS Committee Minute Book 1897-1903, Finance Committee Minutes, July 19 1897, 5. References to slides made by Simpson are also found in the Map Room Accession book.
[595] 'Newton & Co., submitting an estimate for a screen for the dioptric lantern. To be left to Mr. Freshfield.' RGS Committee Minutes, Finance Committee meeting April 9, 1888: 237.

and the fact that these were directly to hand for examination by audiences, may also have contributed to there being fewer lantern-slides associated within these meetings. Finally, the factor of light may have prohibited the effective daytime use of the lantern. The utility of such conjectural speculation is debatable, but actually forms part of the method of imagining the practicalities of the Society's former 'lightscape' spaces. The Map Room had been covered by a glass roof in 1871.[596] The printing of Technical meeting papers, and their distribution to invited audiences, in advance may also have been a direct consequence of this. Thus, albeit on this small scale, the geographical factor, ie. the conjunction of space and, skilled, human input, can be seen to have shaped geographical concepts in visual or textual form.

The experience of viewing lantern-projected images in the Map Room differed from that of the Evening meetings across the street in the Burlington House lecture hall. Burlington House was considerably larger than the Map Room and consequently the images projected would have been larger, as were the audiences which might have seen the images. The lecture theatre would also have been darker than the Map Room due to the evening scheduling of meetings. The timing made it more likely that certain audience members may have consumed alcohol prior to attending a lecture. This might account for the heightened emotional responses of some to the images and subjects in the Evening Meetings, although it is clear that RGS staff and Fellows also indulged in well-lubricated lunches too.[597] There would also have been a more formal distinction between the screen, the speaker and the audience in the Burlington House space than in the Map

[596] C. Otter, *The Victorian Eye*; RGS Committee Minutes Book March 11th 1867 – January 24th 1876, meeting December 11th, 1871, page 326.
[597] Mill, *The Record,* 104.

Room. The projected image on the screen, large as it was, within the even larger space of the hall, engendered a greater distance between the audience and the viewed image. Such a spatial distribution, in addition to the darkness of the hall, may have fostered a passive reception of images and lectures. The binary opposition between the lantern-slide image, projected by light, contrasted with the surrounding darkness was significant in heightening the visual sensations and embodied responses to the lantern lectures. Finally, the reiteration of a spatial configuration commonly associated with theatrical and entertainment performances was no doubt a significant factor in the shaping of audience receptions of lantern-slide lectures.

In contrast the Map Room was smaller than the Burlington House Hall, and because Technical meetings were held towards the end of the afternoon, perhaps owing to the glass ceiling, it was a lighter one.[598] The Burlington House Hall, judging by a photograph from 1903, was just that; a hall, with chairs and vast blank walls, which perhaps facilitated the Evening Meetings role as social pageants of human display at which people might see and be seen. In contrast the Map Room would have been full of other objects and images to distract. Doubtless, people crossed it in order to access the library above too. The smaller space was, however, perhaps more intimate for the smaller Technical meeting gatherings. Despite Markham's intention that the meetings should include a degree of formality, alluded to above, such smaller gatherings may have been more relaxed in character and discussion and exchange facilitated as a consequence. Thus further evidence of the social construction and discursive nature of

[598] RGS Council Meeting Minute book March 11th 1867 - January 24th 1876, Meeting December 11th, 1871, 326.

knowledge is brought to light by this study. Not only were the Map Room meetings illustrated by fewer lantern-slides, apparently, but these would have been projected on a smaller scale than in Burlington House. Thus the Technical paper illustrations may not have had the same grandeur or impact of those projected in the Evening Meeting space. Although held earlier in the day, and although the smaller scale of projected lantern-slides is likely, as Chapter 8 shows, Technical Meetings' audiences responded emotionally and in a similar fashion to Evening Meeting audiences. We may deduce that scale was not necessarily an important factor in producing such responses.[599] A degree of speculation is justified here. The smaller scale of the venue and the proximity of the smaller audience to the screen may have meant that speakers and audiences approached the screen more closely to scrutinize aspects of the image and dispelling in the process some of the enchantment and mystery of images, and normalizing them or making the images and that which they represented seem controllable and more comprehensive to the (historically- and geographically-specific) human scale. It is not known who projected slides during the Technical lectures. H. W. Simpson, or even H. R. Mill may have undertaken this. Related to this, and perhaps further diluting the sensational or spectacular impression of projected lantern-slides was the fact that in the smaller space, the audience would have been in close proximity to the lanternist.

Across the 1890s the number of recorded Technical meetings increased. The number of such papers rose in 1895 around the 6th International Geography Conference, and in the 1897 and 1898 sessions four papers were held. The year 1899 saw a marked decrease in the

[599] The concept of 'emotional contagion' would be a useful one to bring to bear on the RGS lantern-slide lectures.

Technical papers, perhaps owing to Mill voicing his concerns about interruptions; just one paper was read that year (Professor Hull's Sub-oceanic physical features on 27 Jan 1899).[600] Simultaneously, 1899 saw an increase in the Society's scientific Evening meetings. Hitherto only one had been held each session. This suggests a growing interest in, and understanding of, scientific subjects on the part of the RGS Fellowship and wider public.[601]

Lowther lodge (1913 – 1939)

After many years of deliberation and fundraising the RGS moved to Lowther Lodge in South Kensington. Daniels likened this architectural incarnation of the RGS to 'a picture house for the production, reproduction and display of geographical imagery, in maps and views, drawings and photographs, lantern slides and films, a world of entertainment as well as instruction.'[602] But this phase of the RGS, although apparently involving domestication, can also cast recast the Society as a 'travelling landscape object'.[603] The original domestic space of this building was soon transformed around the Society, its Fellows and changing practices and needs, including those of the lantern. At Lowther Lodge the range of spaces in which lantern-slide activities occurred diversified and expanded further. As Ryan showed, it was here that the RGS constructed its new lecture hall around the practice of the geographical projections.[604] Throughout 1928 the Committee on

[600] E. Hull, On the Sub-Oceanic Physical Features off the Coast of Western Europe, Including France, Spain, and Portugal *The GJ* 13 (3), (Mar., 1899), 285-289.
[601] J. W. Gregory, The Plan of the Earth and Its Causes, *The GJ* 13 (3), (Mar., 1899), 225-250; V. Cornish, On kumatology (The Study of the Waves and Wave-Structures of the Atmosphere, Hydrosphere, and Lithosphere), *The GJ* 13 (6), (Jun., 1899), 624-626.
[602] S. Daniels, Boundary Crossings, Geographical imagination, *Transactions of the Institute of British Geographers* NS 36, 2011, 185.
[603] della Dora, Travelling landscape-objects, 334-354.
[604] J. R. Ryan, *Photography, visual revolutions and Victorian geography*.

Plans for Hall met to design the hall and extension, which were due to be ready before the Society's 1930 Centenary Celebration. Mill and Freshfield were amongst those who contributed to designing the hall.[605] The Society's lantern use was taken into account by the firm of architects Kennedy and Nightingale, and the whole design of the hall space was specifically conceived around the technology's use,[606] from the angles of the seats to the height and width of the double screen, the height of the gallery and the angle of projection. There were also

> delicate considerations of the height of the gallery and the angle of lantern projection. […]. It was agreed further that the screen should be lower than shown by Mr. Kennedy and there was no real objection to the lecturer appearing occasionally against the bottom of the picture. [607]

The use of the space for lectures, as well as images projected and viewed, also shaped acoustic designs. The new hall seated audiences of about 860 and with the addition of an ambulatory connecting the hall to the museum, meetings were again followed by convivial conversation and refreshments.[608] The design was deemed a success by the Council; the increased attendance at meetings indicated this.[609] Initial concerns that the hall might be too far west for Fellows' convenience were equally dispelled by growing audiences.[610] The use of the lantern meant that additional costs and time were incurred in altering and adapting the plan of the hall due to 'the demands of local authorities under the manifold requirements of the

[605] RGS Committee on Plans for Hall, 20th February 1928, 104.
[606] J. R. Ryan, *Photography, Visual Revolutions and Victorian Geography,* 2005.
[607] RGS Committee Minute Books, Committee on Plans for Hall, 26th November 1928,141.
[608] (RGS ACR 1929, 3-4).
[609] RGS ACR 1929, 3-4.
[610] RGS ACR 1929 year 1928, 8.

theatres and Kinematograph Acts'.[611] The Building Fund to which Fellows could contribute therefore remained open. The London City Council's regulation of public spaces 'which does not discriminate between the private hall of a scientific society composed of rational persons and the public theatre of any degree'[612] appears to have considerably irritated the RGS Council.[613] This reflects a century of change since the Society's foundation in 1830 and its twin aims of promoting a form of knowledge considered to be both entertaining and edifying, as previously noted. The Society's shifting identity and in the prominent staff and officer's conceptions of it is also discerned; despite the objections raised to the lantern, the medium had become a fixed feature of the Society. The Council's disquietude at the London City Council's adjudication echoes the protests of those initially against the use of the medium and reveals the changing authority of the RGS as it came to be associated with science. This corroborates Ryan's assertion that notionally scientific and popular affairs at the RGS were muddled.[614] This tallies with Lightman's conclusions that there was rarely a fixed or permanent distinction between practitioners, professionalizers and popularizers of science.[615]

The projection rooms

Lowther Lodge's lecture hall has a complex internal geography. Constructed within this space there was a projection room in which several lanterns were stationed and from which lantern-slides were projected. Projection, as Ryan stated, was eventually 'built into the very architecture of

[611] RGS ACR 1929 year 1928, 9b.
[612] Mill, *The Record,* 230.
[613] Ryan, Photography, visual revolutions and Victorian geography, 231.
[614] Ryan, Photography, visual revolutions and Victorian geography, 215.
[615] Lightman, *Victorian Popularizers of Science*.

… the RGS. Indeed it is a measure of the extent to which, despite occasional protestations by some geographers, photography has revolutionised geography, helping to transform its popular face and evolving professional status.' [616] In 1931 a bequest of £500 from Mr. Alfred Maudslay, a former Honorary Secretary, Vice-President and Fellow present at the first lecture at which lantern-slides had been projected[617] came to the Society.[618] This enabled the Council to equip the projection room with a high quality projector for showing lantern-slides, kinematograph films and 16mm film.[619] Practices of display were changing; the lantern was being superceded by these new technologies.[620] The bequest allowed the Society to run a special programme of films of geographical interest, and to screen films at the ordinary evening meetings.[621] Further additions of modern equipment were made to the Projection Room throughout the 1930s.[622] After World War Two further signs of the lantern's demise appeared; 'An improved apparatus' for the showing of 16 mm films was purchased.[623] The 1950s saw more investment in modernizing the hall with a new sound system and the installation of a duplicate 16mm projector,[624] which required the enlargement of the Projection Room.[625]

Photographic Dark Room and Copying Room

Further investments and changes to the physical structure of the building were made to support the increasingly visual and mechanized practices of

[616] Ryan, Photography, visual revolutions and Victorian geography, 231.
[617] *Proceedings of the RGS*, New Monthly Series 8, (Sep., 1886), 565-7.
[618] RGS ACR 1933.
[619] RGS ACR 1933, 9.
[620] RGS ACR 1932, 2.
[621] RGS ACR 1932 (for 1931), 2.
[622] RGS ACR 1937 (for 1936); ACR 1938 (for 1937).
[623] RGS ACR 1949 (1948), 3.
[624] RGS ACR 1954 (for 1953), 6.
[625] RGS ACR 1955 (1954), 2.

knowledge making in the early twentieth century. Four rooms in the basement of Lowther Lodge were refurbished. These included a photographic dark room where photographs and film could be developed and a copying room designed for the on-site reproduction of maps, books and original artwork, thus avoiding their removal.[626] It was recorded that:

> […] a photographic dark room has been arranged, and provision is being made for copying maps and drawings. A very fine camera by Hare, taking plates up to 12 by 10 in., has been presented for this purpose by Mr. A. P. Maudslay, and suitable mounting and adjustable easel are being constructed. A lantern has also been fitted so that slides may be projected conveniently at any time.[627]

This evidences the increasingly visual nature of geography and changes to practices of production, exhibition and consumption of visual forms of geography as the Society became a center of development, production, reproduction and circulation of images.

The Photograph Room and the Museum

Although the Burlington House lecture theatre and the Map Room continued to serve as the Society's sites of geographical projections, the lantern-slide medium's flexibility enabled the viewing of slides across a range of spaces and with technologies other than the lantern. From 1884 the Map Room staff frequently curated exhibitions of photographs at Savile Row to accompany the Evening meetings.[628] In 1913 the re-design of Lowther Lodge added an extension that became the Photograph Room for

[626] Finance Committee Minutes, 15th December 1924, 238.
[627] ACR 1926: 3; Mill, *The Record,* 231.
[628] RGS AP/32, Library and Map Committee, November 11th 1892, 2.

exhibitions and storage on the southwest corner [629] recognizing, as Lord Curzon declared, that 'the camera is now a scarcely less valuable ally of the geographer than the plane-table and the theodolite'.[630] Lantern-slides were viewed on hand-held viewers at South Kensington from 1914, and displayed in stands from 1918.[631] While the Map Room staff managed the lantern-slides on a daily basis, from 1913 the slides were stored in the Photograph Room (Figure 20) and displayed in the lantern-slide stand in the Museum exhibition space, in which objects, including 'relics of exploration' chosen by Lord Curzon himself were exhibited.[632] The knowledge making process within the RGS museum and the geographical projections spaces thus differs from Alberti's framing of knowledge making.[633] Here I showcase the discursive construction of nature through deconstruction and, through and around, instead of behind, glass.

[629] L. Walker, The Royal Geographical Society's house: an architectural history, (1980),127.
[630] *Geographical Journal of the Royal Geographical Society* 44 (1), 9; Walker, The Royal Geographical Society's House, 127.
[631] RGS ACR 1915, Library and Map Committee Minutes, 7th March, 1918, 4.
[632] Earl Curzon , Address to the Royal Geographical Society, The *GJ* 40 (1), (Jul., 1912), 7.
[633] S.J.M.M. Alberti, *Constructing nature behind glass, Museum and society* 6 (2), (Jul. 2008), 73-97.

Figure 20. RGS Photograph Room (in the background on the right) and Council Room (foreground) at Lowther Lodge. (RGS-IBG) Used with permission of the publisher.

Figure 21. Photograph of the RGS Museum at Lowther Lodge, c. 1920. (RGS-IBG) Used with permission of the publisher.

The picture of lantern-slide display and viewing locations is one of plurality within the single institution of the RGS. This undermines and pluralizes both existing concepts of the RGS and erstwhile understandings that lantern-slides were only associated with impersonal and indoctrinating mass entertainments and screen culture.[634]

The Photograph Room appears to have first occupied a small space (the present-day kitchen) next to the Council Room on the ground floor. (Figure 20.) However by 1930, it had expanded into the larger adjacent Council Room. Mill states that from the lobby there was:

> Ahead the photograph Room, formerly the Council Room, contains part of the collection of photographs and lantern-slides, of which a selection is shown in the adjoining Exhibition Room. Next to the photograph Room, on the south front of the house, is the large Map Store, formerly the map Room, where are the catalogues, and where the great mass of incoming material is dealt with.[635]

A selection of the Society's photographs were on view in changing exhibitions. Framed photographs hung on the walls, whilst photographs were displayed in two large cases in the middle of the room above drawers which housed the lantern-slide collections.[636] A photograph of the Society's Council Room (present day tea room) gives a tantalizing glimpse through a glass-paneled door of the photograph room and exhibition displayed in it (Figure 20.) The photograph room offered a changing programme of exhibitions in different media, including photographs, watercolours, oil paintings and sketches, some of which were produced by lecturers and others by Fellows. As the committee noted:

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[634] Vogl-Bienek and Crangle (Eds), *Screen Culture and the Social Questions 1880-1914*.
[635] Mill, *The Record,* 228.
[636] RGS ACR 1914, 10.

> The room opening out of the Council Room… has now been completed and fitted for the exhibition of photographs and the storage of lantern-slides. A selection of photographs from the collection of the Society is always on view in two large cases in the middle of the room, and framed photographs are hung round the walls. The lantern-slide collection is being arranged in drawers below one of the exhibition cases, and provision has been made for a thorough overhaul of the collection, and the construction of a subject catalogue.[637]

The RGS Museum comprised another important, but barely explored, space in the Society.[638] Lantern-slides were shown in a stand in the Museum from 1918[639] to 1945 (with the exception of 1941-1943).[640] The doors of the RGS Museum (located in the current hall) were open to the paying public of non-RGS Fellows from 1918 until 1945.[641]

Della Dora emphasized the embeddedness of images in 'landscape-objects'.[642] Here the lantern-slide projection process queries this assertion since the process of projection with a lantern and light source disembodied the image within the two sheets of glass of an individual lantern-slide. The graphic representation was thus not solely embedded, but was instead set in motion. Simultaneously, during the projection process the 'material support' of the glass slide remained static within the magic lantern. The relationship between the material support that served as a vehicle, and the image, is complexified as a result. Nevertheless, it was because of the specific glass materiality, discussed in Chapter 2, that the projection and transport across space of the image, was made possible. Here then the 'travelling landscape-object' is the light projection thrown on to the screen

[637] RGS ACR 1914, 10.
[638] Driver, Hidden histories made visible?, 420–435.
[639] RGS ACR 1918, 13.
[640] ACR 1918, 13.
[641] RGS ACRs 1918-1946.
[642] della Dora, Inverting perspective, 334.

from the lantern. This I take as a 'lightscape' as explained above.[643] This process was not one of dematerialization, but of rematerialization. Finally, if lantern-slides are to be understood as embedded then it is, perhaps, more apposite to see the projected images as being set not upon the screen, but within socio-techno landscapes, that were, in turn, framed by architectural spaces or locales.

The range of spaces in which lantern-slides circulated, and were displayed and viewed demonstrates the flexibility, hybrid attributes and physical mobility of the medium. Also revealed is, firstly, the expansion in the numbers of photographic and lantern-slide materials owned by the Society and a concomitant expansion in the spaces that they occupied. This demonstrates an expanding spectrum of sites and scales of knowledge production and consumption: lantern-slides displayed in the Museum were not necessarily associated with lectures. The presence of lantern-slides in a museum open to new and paying audiences demonstrates the semi-openness and porosity of the RGS, its space and its materials and ideas to new audiences of non-Fellows as well as the financial imperative to do so (after the move to South Kensington). Thus in order to sustain the RGS and its manifold activities, a degree of flexibility on the part of the Society in the authorization or denial of access to its space, materials and knowledge was vital. This evidences a spectrum of audience engagements with lantern-slides and other materials. For example in the RGS audiences' interpretation of lantern-slides alone or in groups, and using a variety of methods, with a hand-held viewer rather than solely in the context of a lecture.

[643] Bille and Sørensen, Anthropology of luminosity and the agency of light, 266.

Lantern-slide finances: income and expenditure

Here I consider the review of the income from, and payments for, lantern-slides as well as overall Meeting and Map Room costs across the period 1885-1960. These costs changed throughout the period of lantern-slide use by the RGS but are nonetheless pertinent.[644] A broad assessment demonstrates that the Society never recuperated the annual lantern-slide costs, nor made a direct profit on them to cover their production costs from the hire scheme outlined above.[645] The cost of hiring lantern-slides remained fixed at 2 shillings a dozen from 1893 to December 1922.[646] However, the annual income generated by lantern-slide hire alone could never have covered the overall expenses of lantern-slide production costs, including purchase of photographs, lantern-slide materials such as glass, chemicals, glue, labels and human labor. Nor did lantern-slide income cover meeting costs, particularly the overtime fees of the projectionist and projection materials such as gas, bulbs or electricity, nor overall Map Room costs comprising storage, repair and indexing materials and human labor. This was the case throughout the period 1885-1960. Given that there was no primary economic benefit to the use of the medium, it is notable that the Society continued to engage with both lantern and slides. This ongoing investment needs to be understood, firstly, in relation to the new level of investment in the medium of photography and, secondly, in relation to the RGS's educational initiatives, discussed in the chapters below. The

[644] RGS Annual Council Reports, contain information about the previous September-June period. All the raw data gathered from these reports in this research has been made available to the RGS Archives.

[645] The financial figures of lantern-slides are difficult to quantify and understand in relation to other RGS expenses. Furthermore, it is not always clear whether the lantern-slide payments listed in the ACRS refer to the making of lantern-slides, the hire of a lantern or payment to a lantern projectionist.

[646] RGS ACR 1893.

Society's overspend in the 1880s and 1890s on education, photographs and lantern-slides eventually paid off when the number of Fellows gradually began to rise from 1889-90.[647] Although not directly financially advantageous, the use of lantern-slides constituted cultural capital in other ways, notably by attracting audiences and expanding the Fellowship. The late-nineteenth-century visual products of the RGS such as the photograph collections and lantern-slides can be seen as part and parcel of the drive to shift the position of geography within British science and society.

The 1870s saw a re-assertion of the RGS's founding objective of promoting geographical knowledge. In parallel with the RGS's drive to create visual forms of geography (such as lantern-slides) there were also financial imperatives and the imperative of financing the upkeep of the Society and its educational ventures. Government grants could not be continuously relied upon. Consequently, the funding avenue for the educational activities was to increase the revenue derived from Fellowship numbers and subscriptions. The Society did this, in part, via the use of the lantern and by implementing additional changes in its visual practices. Although we might see that the Society's appeal to diverse professional and public audiences was increased in the longer-term, Chapter 5 shows how in the short-term the use of the lantern in 1886-87 actually threatened the Council, composed as it was of divergent interests.

Demographic of lantern-slide use – deposit and survival c.1885-1960

The section below elucidates the role of lantern-slide practices and their associated actors within the RGS's field of geography. It explores in the

[647] RGS ACR 1890.

constituent parts of the RGS Fellowship, and its diversification and expansion from the 1880s onwards as a new phase of institutionalization of geography began (the process can be understood to have taken place before the 1880s, but that period is not the focus of this study). I outline the simultaneous cultivation of divergence, and unity, of the Fellowship, as knowledge was adapted, and as lecturers communicated it across the diverse types of RGS lectures, and as individual audience members responded to these lectures. In contrast to provincial geography societies, the RGS succeeded in attracting academics from a range of later nineteenth-century professionalizing sciences.[648]

The accessioning and de-accessioning of items into the Library and Map Room collections was one in which the producers of images, frequently speakers at the Society's meetings, interacted with the Map Room staff, who then collectively decided on what material would be admitted, with the assistance of the Library and Map Room Committee and Council. The methodology explained in Chapter 3 allowed for a broad analysis of the demographics of lecturers. Over the c.1885-1960 period, the majority of Evening Meeting speakers were colonial administrators, priests or those with clerical titles, civil servants, commercial people, travellers (some of whom were women), and RGS staff (which I group in the category of 'Others'). This composite demographic shows the increasingly 'public and practical' nature of geography in this period.[649] It demonstrates the fluidity of the term geography and pluralizes configurations of professionals, practitioners and popularizers of geography in line with Lightman's

[648] J. M. Mackenzie The provincial geographical societies in Britain, 1884 -1914 in M. Bell, R. Butlin and M. Heffernan (Eds), *Geography and Imperialism, 1820-1940*, Manchester University Press, 1995, 93 – 124.
[649] Driver, *Geography Militant,* 315.

reasoning.[650] Two groups roughly made up the other half of Evening papers across the period 1885-1960; speakers from the armed forces and academics, who were not solely relegated to the more specialised Technical Meetings. There was a higher number of armed forces speakers than those with academic credentials. Nevertheless, the number of papers by academics peaked in the 1900s and 1910s reflecting the growth of a community of academic geographers across UK universities that were the fruit of new geographies of geography's professionalization and institutionalization. Forces speakers remained high throughout 1900s until the 1930s. This situation then changed, in the wake of the financial crash of 1929. Following the formation of the Institute of British Geographers in 1933 there was a marked drop in papers by both academic and forces papers whilst, simultaneously, an increase in papers delivered from the composite category of others.

Figure 15 above shows the general evolution of RGS lantern-slide accessions numbers over the period c. 1886- 1960. The Evening Meeting lantern-slides of academics were accessioned in fewer numbers than those of forces or other speakers across the period 1885-1960. Conversely, lantern-slides of forces speakers, who delivered the most papers, had the highest ratio of lantern-slide deposit and accession. The growing community of academic speakers' accessions of lantern-slides peaked in the 1910s, when those of forces and accessions, a period corresponding to the spatial apogee of the British Empire. Nevertheless, decade on decade, the Map Room accessioned the majority of lantern-slides from the composite group of other speakers.

[650] Lightman, Victorian Popularizers of Science, 8-13.

With regards to the Technical Meetings, speakers of the composite other group also delivered significantly more papers than individuals with academic credentials or forces speakers, even when one subtracts those papers delivered by RGS members of staff. This is further reflection of geography's inter-disciplinary past and a tradition of demographic diversity and visual plurality. It is also testament to a new, rather than sole, phase of gradual institutionalization and professionalization within British academia. More sets of lantern-slides from this other category were also accessioned. Papers by academics and the lantern-slides projected with them, were second highest, followed by those of forces speakers. In a similar pattern to the number of papers delivered, the numbers of both academic and forces accessioned lantern-slides declined noticeably in the 1940s and 1950s.

Significantly, the numbers of forces speakers delivering papers in Technical Meetings remained high. There may be several explanations for this; academics may have wished to keep their lantern-slides for further lectures; equally, academic speakers might have been less financially affluent and unable to donate their slides to the RGS. Later there may even have been a lack of perceived kudos in donating lantern-slides, particularly around the time of the International Geographical Union held in Cambridge in 1928 and the creation of the IBG in 1933 when there was resentment from certain members of the academic community towards the Society, particularly towards Arthur Hinks (RGS Assistant-Secretary) for the lack of space devolved to their research.[651] Finally, it is also possible that the academic lecturers used larger numbers of lantern-slides, but the Society, or perhaps the Map Room curator and staff, did not wish to purchase entire

[651] D. R Stoddart, '50 Years of The Institute of British Geographers "When Geographers formed an alternative society"', *Geographical Magazine* 55, (1984), 40-41.

sets. Technical and Scientific Meeting slides may have been less sensational, of restricted appeal and less likely to be hired and to generate revenue for the RGS.

Survival rates of lantern-slides

Overall the RGS acquired fewer Technical meeting lantern-slides than Evening meeting ones, most likely because there were nearly three times as many Evening meetings than Technical afternoon ones. Equally, when Technical meeting lantern-slides were acquired, it seems that fewer slides, when compared to those of Evening meetings, were accessioned. A greater number of slides than the number of acquired slides could have been projected in lectures; the RGS could have been strategically selective in which slides it bought, perhaps knowing what sort of subjects its Fellows had a taste for, and lecturers could have been selective about which slides/images they chose to sell.

The surviving Technical meetings lantern-slides nearly all comprise maps, diagrams or tables, with very few photographic images. Photographic lantern-slides generally depict physical geographical subjects such as landscapes instead of figurative human subjects. Conversely, the surviving lantern-slides of Evening meetings comprise numerous images of human manifestations of geography, from the human body to material culture artifacts such as art and architecture of peoples past and present, as well as photographic landscape views, that might also be conceived of as part of the human material culture assemblage.

Overall purchased and donated lantern-slides

Both donated and purchased slides of Technical meetings generally have a higher survival rate (ie. more complete sets survive) and a lower destruction rate than those of Evening meetings. This may be because these slides were hired less frequently and were therefore less faded or, possibly, that they were produced with better quality and more stable chemical and materials. Finally, perhaps, that they were not targeted for destruction as rigorously as those which had been used to illustrate Evening lectures.

The adoption and circulation of lantern-slides across the RGS's activities and spaces was co-relative with the Society's engagement with other visual media. By 1885 the Society's diagrams, then stored in the Map Drawing Department, had been re-organized and 'all that were considered useless were destroyed' possibly in order to make way for the incoming flux of photographic media.[652] Later rules about the disposal of Library materials were drawn up in 1937. It was decided

> That such sets should not be broken up by extracting and preserving the articles of geographical interest, and disposing of the remainder of the volumes. […] 8. Periodicals of a literary or general interest can be dealt with under less stringent conditions, and should be disposed of before the class of scientific academic conditions.[653]

These phases of de-accessioning, though due in part to pressures upon limited space within the Society, are also indicative of phases of growth and change elsewhere (see Figures 15 & 16). The retraction of lantern-slides needs therefore to be understood as relatively proportional to phases of extension elsewhere. Similarly, a reduction in the RGS's financial assistance given to exploration permitted the investment in education. From 1946 the Map Room was under-staffed and struggling with an increased

[652] RGS AP/32, 17/11/1896.
[653] RGS Committee Minute books, Sub-Committee on Duplicates and Periodicals, 8th July 1937, 279.

workload due to the large influx of material after World War Two. There was also a shift beyond the Society in visual practices and technologies of reproduction and projection such as the development and dissemination of lighter, thinner, cheaper transparencies. The staff were occupied with dealing with requests for photographs and cutting and editing films [654] to the point that 'Half the accessions in the last two years had been catalogued by the equivalent of one year's work of three members of the staff'.[655] In 1948 newly appointed assistants reduced the back log in accessions and cataloguing; Miss Gardner was employed part-time to assist Mackay and Day in the Map Room and Miss Ferrar's appointment as Second Assistant was made permanent, but the Map Room occasionally had recourse to volunteers and in 1949 sixth form boys were enlisted to help with cataloguing.[656] The collection of lantern-slides was continually growing, however, and the need for new boxes required to house them cost the Map Room space, time and money.[657] Eventually, these pressures led to the creation of a sub-committee in October 1950.[658] It was 'to report on 10 measures for dealing with accumulation of recent accessions […] having considered the work to be carried out, recommend the recataloguing of the collection, about one quarter of which has been done, should be the first priority.' [659] Thus the fate of the lantern-slide collections was decided. The outcome was the withdrawal of 'dated' slides and the preparation of a summary list of sets to be available to borrowers.[660]

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[654] RGS Library and Map Committee Minutes, 26th January 1946, 48 [page 2 of report],
[655] RGS Library and Map Committee Minutes, 8th March 1948, 1.
[656] RGS Education Committee, 16th May 1949, 1.
[657] RGS Finance Committee, 14th November 1949, 94.
[658] Library and Map Committee, 22nd May 1950, 114.
[659] RGS Library and Map Committee minutes, Report of Sub-Committee to the Map Room, 6th November 1950, 123.
[660] RGS Library and Map Room Committee minutes, 18th June 1951, Report of Sub-Committee to the Map Room, 1.

The first phase of lantern-slide de-accessioning commenced at the end of January 1951 (the 25th) and continued on and off until early May 1951. Further phases of lantern-slide withdrawal occurred in 1952 and 1953. The dates of de-accessioning were recorded on the lantern-slide set index cards. The reason stated was 'Destroyed faded' or sometimes the abbreviated version of 'D.f.,' although in addition to this several other sets of lantern-slides were destroyed by enemy action and in the blitz.[661] There were then two types of destruction that I frame in terms of Latour's theorizing of iconoclasm.[662] Firstly, through the fading of the image and, secondly, through the physical destruction of the material objects of the lantern-slides. The fading and de-accessioning largely concerned lantern-slides dating from the 1880s to the 1920s. These patterns of fading may reflect slides which were repeatedly exposed to light and possibly lantern-slides that were most popular and frequently hired, as well as particular types of unstable and less durable light-sensitive chemicals which could not hold the image.

When the withdrawal began in 1951 George MacKay was the Map Room Curator with Mr. E. Edward Day working under him as his assistant. Throughout the 1950s E.E. Day continued the withdrawal of lantern-slides.[663] There appears to have been a chronological order to the undertaking. The first wave withdrew lantern-slides dating predominantly from the 1880s to the late 1920s. The second wave largely concerned slides from the late 1920s (c.1928) to 1944. Further investigation might

[661] Thus the lantern-slide collections went through two forms of iconoclast.
[662] Latour, *Pandora's Hope, Essays on The Reality of Science Studies,* 266-292.
[663] RGS Committee Minute book January 1950 – June, 1953, Library and Map Room Committee meeting 18th June, 1951, 1.

ascertain whether or not the majority of faded and destroyed lantern-slides were produced by Simpson's methods.[664]

Rose stated that slides 'have no framing that suggests any kind of technical or aesthetic - let alone social, economic or institutional - constraint on the image.'[665] This thesis's selected methodology contradicts this assertion in two ways. Firstly, when taken as material objects slides are seen to have a frame consisting of the multiple indexing systems, and the labels with manuscript additions of multiple sequences of numbers, titles, authors, captions on individual slides. These reflect the changing social, economic or institutional frames in which lantern-slides were produced, managed and projected by the RGS social constituencies. Secondly, the chapters below show, by virtue of their association with specific lectures, we can make visible the intersecting social, economic or institutional frames in which lantern-slides were seen. The facets of the collections' formation and destruction presented above also inform Schaffer's analysis of the deployment of optical devices in exposing in iconoclastic fashion the idolatry of others. The indexing systems perform as icons too as specimens that represent that which is 'there, but not there', but once was there, in the lantern-slide collections.[666] In doing so iconoclasts, in turn, became idolatrous and erected icons of new social and scientific utopias.[667] The magic of the cinema camera and moving film would supersede the lantern.

Human 'travelling landscape-objects': the circulation of staff and Fellows through the RGS geographical projections spaces

[664] The RGS Petty Cash Books and Committee Minute Books may provide useful sources for such an enquiry.
[665] Rose, On the need to ask how, exactly, is geography 'visual'?, 216
[666] Schaffer, *The devices of iconoclasm*, 498-499.
[667] Schaffer, *The devices of iconoclasm*, 498-515.

Having in the two previous sections above introduced the space of the lantern-slide collections, and the physical spaces of the RGS via which these were circulated, I next consider the human geography of the lantern-slides. This constitutes a further instance of inverted perspective.[668] By inverting the facets of the Society explored above, I first sketch a portrait of a forgotten figure of the RGS, H.W. Simpson, who by virtue of his involvement in the lantern-slide collections, deserves greater recognition of their iconic status.

H.W. Simpson, the RGS lantern-slide maker and lantern projectionist

The personal, in-house nature of lantern-slide production can be understood as an example of the RGS's co-ordination, authorization and regulation of visual and material forms of knowledge and their contingent social practices. Simultaneously the practice provided the opportunity for the deregulation of interpretations across a number of knowledge making sites. Arguably, all the sites of lantern-slide activity, of both the RGS Savile Row and Lowther Lodge phase (1913-present), are embodied within the person of the RGS lantern-slide maker and lanternist, H.W. Simpson (1864-1940). Simpson's story has, to date, not been told by historical geographers, but his 'mindful' eyes and hands significantly shaped the visual practices of the RGS, the lantern-slide collections and the projection of lantern-slides within lectures.[669] Paradoxically, Simpson was visible in both lectures and in the lantern-slide card index systems (Figure 11), yet in

[668] della Dora, Inverting perspective, 239-246.
[669] L. Roberts, S. Schaffer, P. Dear (Eds), *The Mindful Hand: Inquiry and invention from the late Renaissance to early industrialization*, Royal Netherlands Academy of Arts and Sciences, Edita KNAW, 2007.

view of his historiographical absence he can be understood as an 'invisible technician' of the Society's geographical projections spaces.[670]

As one of the Society's junior clerks, H. W. Simpson, entered the employment of the RGS in 1878 at the age of fourteen, where he was known as George, the name of his predecessor. Throughout the 1880s he repeatedly requested a salary rise.[671] In early December 1889 Simpson approached the Council, outlining his long-standing interest in photography, considerable practice as a lanternist and lantern-slide maker, and suggested that he was sufficiently competent to exhibit the slides at the Evening Meetings.'[672] The Secretary, probably Freshfield, was nominated to assess Simpson's skills with the result that Simpson's salary was raised to £64 per annum as he had an aptitude for managing the slides and lantern.[673] The adoption of the lantern for knowledge presentation purposes therefore afforded Simpson the chance to learn new skills and raise his income.

Simpson first began to make lantern-slides for the Society in early 1890. The first set he made comprised 41 slides for Freshfield's February 10th 1890 lecture on the Caucasus.[674] The Society thus acquired a lantern-slide maker and projectionist, although it still had no lantern. This was remedied, when the Hon. G.C. Brodrick, seconded by Mr. Cust, sanctioned

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[670] S. Shapin, The invisible technician, *American Scientist*, 77 (6), 1989, 554-563; S. Schaffer, Enlightened Automata in W. Clark, J. Golinski, S. Schaffer (Eds), *The Sciences in Enlightened Europe*, University of Chicago Press, 1999, 126-165.

[671] RGS Committee Minute book March 1883 - December 1890, Finance Committee meeting, December 3rd,1883, 33; Finance Committee meeting June 1, 1885, 114; Finance Committee meeting December 7, 1885, 134; Finance Committee meeting December 5, 1887, 221.

[672] [Letter from H. W. Simpson to the RGS, dated 2nd December 1889, RGS/CB6/2057?] Original letter missing; transcribed details courtesy of Francis Herbert, former RGS Map Curator.

[673] RGS Finance Committee, December 2, 1889, 302-4.

[674] RGS Map Room Accession book, 460.

the purchase of 'a dioptric lantern' in Council,[675] though it seems that this was Freshfield's initiative.[676] The Society's first lantern was purchased in 1890 for the sum of £47.12.[677]

Figure 22. [Magic lantern], Walter Tyler, Waterloo road, London. New Pattern Helioscopic lantern, iron body with brass condenser housing glass lens, [c.1887 – 1910].[678] (RGS-IBG) Used with permission of the publisher.

With the help of Bates, the Assistant-Secretary, Freshfield saw to it that Simpson be trained by a certain Mr Davenport (possibly affiliated to the Alpine Club and the Royal Society of Arts) who had worked on the showing of views in the mountaineer and photographer Donkin's illustrated

[675] RGS Council Minute books, March 24th 1890, 2
[676] RGS/ CB7 (1881 – 1910*),* Letter from Freshfield to Bates 19th April, [c.1890], pages 4-5; Mill, *The Record,* 1930.
[677] RGS Finance Committee meeting December 2 1889, 302-4; Freshfield to Bates 19th April, [c.1890], pages 4-5. Currently, the Society holds one magic lantern that does not have a collections number. I have not found any further supporting evidence to indicate that it was the first magic lantern bought by the RGS in 1890.
[678] The firm of Walter Tyler was one of the largest in the U.K. (Mannoni, *The Great Art of Light And Shadow,* 286-288).

lectures.[679] At the Evening Meeting, April 14th 1890, Simpson, probably with the help of Davenport, projected slides for the first time at Meyers' 'Ascent of Kilimanjaro' lecture.[680] Once Simpson's services were secured and the Society had its own lantern, the frequency of lantern-slide lectures gained pace. This may have contributed to the surfacing of tensions within the Society, either in the Map Room, perhaps over the use of the space or the need to find suitable maps to photograph and make lantern-slide version of lectures, or the Map Drawing Department's Chief Draughtsman, Mr Scherbau over the production of maps for lectures.[681] Despite these internal complications, Freshfield, Bates and Simpson initially rehearsed before lectures.[682] Simpson became sufficiently competent; he continued to make lantern-slides and lectures continued to be illustrated. Again Freshfield was instrumental. It was at his suggestion that Simpson received 10/6 per night for his services at the Evening Meetings.[683] His role expanded to include visiting Fellows' to assess their photograph collections and select images of use to the Society.[684] In 1905, he was described as 'Inventive and intelligent … most useful as a photographic artist, apart from his clerical work.'[685] Simpson continued to make lantern-slides beyond his retirement from his official duties as clerk and projectionist in 1923,[686] until

[679] Freshfield to Bates 19th April, [c.1890], pages 4-5.
[680] Freshfield to Bates 19th April, [c.1890], pages 4-5.
[681] RGS AP/32 Minutes of a meeting about the need for the Map Drawing Department to produce maps on time, November 18th 1890, 3; D. Freshfield correspondence to Bates, November 1 1890, page 1.
[682] D. Freshfield correspondence to Bates, November 1 1890, page 1.
[683] RGS Finance Committee, December 1 1890, 343-345.
[684] [Letter from H. W. Simpson to the RGS, dated 2nd December 1889, RGS/CB6/2057?] This letter cannot be found by the RGS Reading Room staff. Transcribed details of it come from Francis Herbert, former RGS Map Curator.
[685] C. Markham, Address to the Royal Geographical Society, *The GJ* 26 (1), (Jul., 1905), 5.
[686] RGS Finance Committee, 20th March 1923, 177.

1937, just a few years before his death in early 1940.[687] Once the Society moved to South Kensington slides were made in the dedicated Dark Room.

Morus's studies of nineteenth-century institutions of science such as the RPI recognised the need for coordination between lantern operators and other participants.[688] This was also the case at the RGS where the use of lantern-slides in lectures required a new degree of coordination and cooperation on the part of the Society staff and lecturer. The projectionist worked in tandem with the speaker to establish the order in which lantern-slides were to be projected and the timing of their punctuation within the narrative sequence or trajectory of the paper. This itinerant state continued until the Society's lecture hall and projection room were constructed at Lowther Lodge in 1929. In 1918 when the use of Burlington House was withdrawn from the Society, and until 1923, Simpson moved around different London venues, though at certain venues such as Queen's Hall another lanternist was employed, perhaps because of technical complexities of different lanterns and regulations of public spaces.[689]

Travelling from Savile Row to Burlington House and other lecture venues, Simpson can, albeit on a much reduced scale and with some imagination, be seen as operating in the tradition of the itinerant lantern show pedlars of old.[690] The physical distances travelled may have been short, but this expansion of his skills and responsibilities also required a new degree of intellectual, physical and social mobility to fulfill both day and evening roles. Simpson served the Society for over forty years first as

[687] RGS Finance Committee, 18th March 1940.
[688] I. R. Morus, 'More the aspect of magic than anything natural': the philosophy of demonstration in A. Fyfe and B. Lightman (Eds), *Science in The Marketplace: Nineteenth-Century Sites And Experiences*, University of Chicago Press, 2007, 365.
[689] This was the case when Dr. Sven Hedin read his lecture 'Journeys in Tibet, 1906-1908' at a meeting held at the Queen's Hall, February 8, 1909.
[690] Humphries and Lear, *Victorian Britain Through The Magic Lantern*; della Dora, Inverting Perspective Icons' performative geographies; Rossell, Demolition d'un mur, 327.

Junior Clerk and then Senior Clerk. His services as 'lanternist' made him a familiar figure to Fellows and were noted on his retirement in 1923.[691] Mill too remembered him as an important character within the RGS activities in the first decades of the twentieth century and praised his skills as both a photographer and a lanternist.[692] This thesis therefore starts to tell the story of this near-forgotten, overlooked member of staff, once so central to the Society's knowledge making practices.

Conclusion

The RGS comprised spaces of training in image making; image collection and co-ordination, image production and packaging and, finally, image display and dissemination. By mapping the interlinked lantern-slide spaces and the medium's trajectory through the various geographical projections spaces occupied by the Society, I showed the processes of transformation and commodification in which lantern-slides were imbricated. The multiple public cultures of geography around the RGS[693] are refracted within and observed through the study of lantern-slide producers and users and reception by a spectrum of audiences.[694]

The evolution of the lantern-slide card indexes also reflects the changing definitions, conceptual scales and geographies of geography. Such transformations were fostered by negotiating the forces of shifting disciplinary boundaries between the earth sciences, especially geology, the humanities and the emerging and formalizing social sciences. The

[691] Anon, Retirement of H.W. Simpson, *GJ*, May 1923, 385.
[692] Mill, *An Autobiography*, Longman Green and Co., 1951, 101-2.
[693] Driver, Hidden histories made visible?, 420–435; Ryan, Photography, visual revolutions and Victorian geography; Jones, Measuring the world.
[694] Ryan, Photography, visual revolutions and Victorian geography, 222; Lightman, *Victorian Popularizers Of Science.*

definitions, practices and participants of these disciplines were authorized by a number of institutions in the period of this study. As the chapters below will demonstrate, lantern-slides were certainly one of the visual media acting as vessels and vehicles of knowledge in a process of cross-pollination between the RGS and other societies. Here then we see the mobility and mobilization of the science of geography.

The chapter suggests that lantern-slides can be conceived as 'travelling landscape objects' on a number of scales; as individual lantern-slides, as sets of lantern-slides and the collections as a whole. It is thus via an attentiveness to circulation that we see the cross-currents, exchange and mutual-constitution of those conceived of, often in opposition to each other, practitioners and popularizers of knowledge. The longevity of lantern-slide use demonstrated above, and the co-existence of the lantern and moving film in the RGS knowledge-making practices suggests that the lantern was more than just the defunct ancestor of moving film. Yet related to this is the fact that the mapping of lantern-slide circulation through the physical Euclidian spaces of the RGS, as defined by the houses at 1 Savile Row and Lowther Lodge, also has its limits.

Consequently, in Chapter 5, and in order to reach a deeper understanding of the significance of lantern use by the RGS, I consider the first uses of the lantern and lantern-slides, their circulation and audience responses to this medium. I do so by showing that a spatial research model focused on the RGS is most useful when enriched by historical dimensions. I also locate the RGS's lantern-slide practices within a wider metropolitan, national and international geographical and scientific social and knowledge-making assemblage of geographical projections spaces. I then scrutinize

the introduction of the lantern on a smaller scale. This historical geographical portrait of the collections drew on the concept of 'travelling landscape-objects' in its mapping of the mobilization of lantern-slides through space and time. Within that portrait, I sketched the role of the key, but sidelined, figure of the collections via a vignette of H. W. Simpson. The concept of 'travelling landscape-objects' is most useful when employed across a number of scales, and via the comparison of the routes taken by many 'travelling landscape-objects' of individual lantern-slides and sets of slides into, through and out of the collections. Therefore in subsequent chapters, and in order to respond to the research questions regarding the adoption, resistance and perceived effects of the lantern upon the RGS, I provide more detailed pictures of scenes from the RGS geographical projections spaces. I do so by inverting the methodology; having in this chapter been concerned, principally, with the physical spaces of geographical projections, I next foreground the human assemblages associated with them and some of the byways which brought the lantern to the Society.

CHAPTER 5. SCIENTIFIC FAITH, PHOTOGRAPHY AND THE MAGIC LANTERN

Introduction

The previous chapter provided a historical geographical panoramic portrait of the RGS lantern-slide collections. By contrast, in this chapter, I respond to my first research question, by scrutinizing the Society's adoption and early engagement with the technology of the lantern. Additionally, having explored the internal human and physical aspects of the Society that relate to the collections, in this chapter I expand their historical geography by setting the connections between key figures of the RGS within wider metropolitan, British and international frameworks of understanding. This chapter therefore seeks to invert the perspectives of Chapter 4.[695]

Below I address the assertion that the negotiations between what were conceived to be scientific and popular practices 'lay at the heart of many debates at the RGS in the Victorian period and its attempts to promote its new branch of science.'[696] I have previously alluded to the role of the lantern in numerous social and political reform movements.[697] The RGS's adoption of the lantern in the 1880s and the greater role given to visual evidence and visualization in the Society's lectures, was the chosen method of a reform movement in the Society that sought a more vigorous promotion of geography education and the securing of geography's recognition as a science. Here I want to argue that science was, similarly to religion, a faith-based regime of trust, narrative and ritual. I argue that geographical projections spaces and the lantern-slide practices in them

[695] della Dora, Inverting perspective.
[696] Ryan, Photography, Visual revolutions and Victorian geography, 215.
[697] Schaffer,*The devices of iconoclasm*, 498-515. Eifler, Between attraction and instruction, 363–384.Mannoni, *The Great Art of Light And Shadow,* 98-102.

must be understood in relation to a more extensive British, and in fact trans-national, movement of geographical science. This sought the promotion of visual methods, science and education of geography and other disciplines, and their institutionalization within British academia.

As seen in chapter 4, lantern-slides were used in RGS lectures from c.1886 onwards. Despite some claims to the contrary,[698] there is little evidence that they were in use or circulation at the RGS before this date. Here I argue that lantern projections were harnessed by various social groups in British society to serve a range of ideological purposes, including that of promoting geographical ways of seeing through the RGS lantern-slide lecture performances, understood here as geographical projections.[699] I show that the utility of the lantern was debated at a time when the Society sought to promote the value of geography education. The RGS's adoption of the magic lantern was a contentious matter and the cause of dissent amongst RGS Council members.[700] The debate at the RGS about the appropriateness of the lantern, detailed below, is informed by works regarding the evolution of technologies of enchantment from the seventeenth to the twenty-first century.[701] In what follows I explore the reasons for the dissent. I then discuss the precarious status of both the RGS as an institution and geography as a scientific discipline and, finally,

[698] Jones claims that 'the RGS had begun to amass a collection of photographic negatives, prints and lanternslides from the 1860s onwards'. However, this appears to be a misreading of her source, H. R. Mill, who refers to 'views' rather than 'lantern-slides'. See L. Jones, *Local Knowledge, Indigenous Agency and the Role of Intermediaries in the History of Exploration: Studies from the RGS-IBG Collections*. PhD Thesis, Royal Holloway, University of London, 2010, 53). Mill, *The Record of the Royal Geographical Society, 1830-1930,* 239.
[699] S. Kofman, *Camera Obscura of Ideology*, Cornell University Press, [1973], English translation, 1998.
[700] Mill, *The Record of the Royal Geographical Society, 1830-1930*.
[701] A. Gell, *Art and Agency An Anthropological Theory*, Clarendon Press, 1998, 271; M.A. Schneider, *Culture and Enchantment*, University of Chicago Press, 1993, pp. xiv + 225.

situate the adoption of the lantern by the RGS and the justification for this in relation to changing geographies of magic lantern use in scientific and cultural organisations in London and further afield in France, as well as changing geographies of science.

Lantern-slides and reform

The 1880s and 1890s were described by H.R. Mill and his co-author Douglas Freshfield as one of 'enlargening ideas and opening opportunities' in the RGS.[702] Mackinder, however, later likened this period to the 'Wars of the Roses'.[703] Mackinder concluded that he himself had been a pawn in a 'battle royal' within the Council of the Society and

> between a hitherto dominant part of explorers, navigators and mapmakers on the one hand, and on the other a small group of scientific men led by Douglas Freshfield. [704]

For Coones, polymath scientist, X Club-member, Honorary RGS Secretary 1857-1863, Francis Galton (1822-1911), was also visionary in seeing in geography 'something more than a mere inventory of facts arranged upon a map.'[705] Mill later averred that the different interest groups only came to blows in 'a series of skirmishes rather than a pitched battle'.[706] Clements Markham, a key RGS figure in these decades, first as Honorary Secretary (1863 – 1888) and then President (1893 - 1905), and writing much closer to the period of dissonance, called this phase of the Society's history 'the

[702] Mill, *The Record*, 98.
[703] H.J. Mackinder, Geography in the Field and in the Study during the Reign of His Majesty King George the Fifth, *The GJ* 86 (1), (July 1935), 3.
[704] D. Livingstone, (1992), 193; P. Coones, The centenary of the Mackinder Readership at Oxford, *The GJ* 155 (1), (March 1989),15.
[705] Coones, The centenary of the Mackinder Readership at Oxford, 15.
[706] Mill, *The Record,* 98. Freshfield would, in 1930, state that 'The struggle was a protracted one: a series of skirmishes; the result a draw.' (D. Freshfield, Anniversary Meeting, 465.)

interregnum' when 'the doctrinaires rampant' controlled the Society.[707] From 1878 the 'progressive' reformers steered the Society on a new course away from the promotion of exploration towards the greater promotion of geographical education and science and the establishment of the public utility of geography.[708] Amongst this group were, as well as Galton and Freshfield, Lord Aberdare, Sir General Richard Strachey, H.W. Bates and later John Scott Keltie. Although we may only be able to speculate about the other individuals who objected to the lantern, the recorded grounds for this merit further consideration.

Nineteenth-century geographies of magic lantern use are as significant as the then contemporary broader visual culture of geography in understanding how and why the lantern was so contentious and how and why it was eventually incorporated into the RGS's knowledge making activities. This study reveals a complex relationship between individual RGS Officers and a range of nineteenth-century geographies of technology. Mill demonstrated that amongst the technological innovations that did not find immediate favor or application in the RGS were electric light and the telephone.[709] Similarly, the adoption of photography and the lantern by the RGS were by no means guaranteed or teleological. The older and more conservative members of Council vigorously opposed Bates and Freshfield's attempts to introduce 'modern improvements'.[710] Reeves also commented on Markham's old-fashioned ways and his opposition to the lantern.[711] However, it is worth considering whether those opposed to the

[707] C. Markham, (c.1900 with additions up to 1910) RGS Manuscript record of The Geographical Society, 449.
[708] Mill, *The Record*, 99.
[709] Mill, *The Record of the Royal Geographical Society, 1830-1930,* 103.
[710] Mill, *The Record of the Royal Geographical Society, 1830-1930,* 103.
[711] Reeves, *Recollections of A Geographer,* 135-136.

lantern were from a common naval background.

Scientific ways of thinking and indeed, the authority of scientific practice, it has been argued, became more prevalent and challenged the place of Christian doctrine throughout the nineteenth century.[712] When the introduction of the new series of the Society's *Proceedings* was discussed 'a battle raged' over the publication's title and over the inclusion of images between conservative council members and the more progressive ones who argued that 'the rapid growth of our membership demanded the presentation of geographical intelligence in a form more popular than that which had hitherto been considered consistent with the dignity of a learned Society.'[713] The new series of the *Proceedings* was nevertheless introduced in 1879 as a monthly publication. The publication retained its existing name until 1893 when 'the title was simplified by the adoption of the more generally attractive and less cumbrous form now in use', the *Geographical Journal.*[714] Freshfield and Mill recalled that the introduction of the lantern into the Evening meetings 'presented a similar problem' to the proposed change to the title of the *Proceedings*.[715] This mistrust of images, with their ambiguous and 'mutable meanings,' offers a parallel with the reaction to the lantern and provides additional evidence of the suspicion towards the changes in language (whether verbal or visual) associated with the attempts by some to widen access to the Society and its forms of geographical knowledge.[716] The inclusion of maps was deemed acceptable, but non-

[712] Lightman, *Victorian Popularizers Of Science*; P. White, *Thomas Huxley Making The "Man of Science",* Cambridge University Press, 2003; J. Secord, *Visions of Science Books and Readers at the Dawn of The Victorian Age*, Oxford University Press, 2014, 305.
[713] H. R. Mill and D. Freshfield, Obituary: Sir John Scott Keltie, *The GJ* 69 (3), (March, 1927), 282-3.
[714] Mill and Freshfield, Obituary: Sir John Scott Keltie, 282-3.
[715] Mill and Freshfield, Obituary: Sir John Scott Keltie, 283.
[716] Ryan, Photography, visual revolutions and Victorian geography, 205; G. Dawson, *Darwin, Literature and Victorian Respectability*, Cambridge University Press, [2007], 2009,

cartographic images were initially resisted and only gradually incorporated into the *Proceedings* in the form of wood engravings, often from photographs, that were produced by the studio of Edward Whymper.[717] A deeper exploration of how the many map makers associated with the RGS perceived the greater support of photography, and the questioning of the extent to which this diverse group felt that photography challenged the authority of the map, is therefore left for future scholars. These changes in the 'attractiveness in the form, more artistic excellence in the illustrations, and a higher literary standard in the presentation of the facts of Geography' were attributed to Freshfield.[718]

Ryan highlights the fact that it was in the lecture theatre and in the discursive spaces of reception in which photographs, in lantern-slide form, were seen by most people.[719] It was through such practices and geographies of display that, for him, photography's dramatic effects were most felt, rather than in the material forms of photographs themselves.[720] I wish here to pursue this line of reasoning by stressing that the revolutionary effect of photography was one of circulation and measured transformation within a public culture of geography. As I show in the sections below, the geographies of photography were transformed through the projection of photographic, and photo-mechanically reproduced, lantern-slides and lectures within the Society's geographical projections spaces. The synergy of the two media would be transformative to the RGS, individual Fellows and the discipline of geography.

[717] Mill, *The Record,* 242.
[718] Mill, *The Record,* 242-3.
[719] Ryan, *Picturing Empire*; Ryan, Photography, visual revolutions and Victorian geography, 222.
[720] Ryan, Photography, visual revolutions and Victorian geography, 229.

The objections raised can be interpreted as indicative of perceptions of the geographical identity of the magic lantern. They are also indicative of the extent to which those who objected to it felt that the place of science, though not necessarily of geography, had changed in British society during the course of their lifetimes. Markham, one of the RGS Honorary Secretaries at the time, later described as 'old fashioned' and hating new things,[721] was amongst those notionally conservative members of Council recorded as opposed to the lantern.[722] Indeed Markham resigned from the position of Honorary Secretary shortly after the medium was adopted.[723] However, Markham's relationship with the lantern was ambiguous since, as I have shown, even before the RGS endorsed the medium he had recourse to it in a lecture on a geographical subject, not to the Society, but in what appears to have been a philanthropic endeavor similar to those of welfare organisations detailed in Chapter 2.[724] In his personal diary of 1886 Markham stated:

> Business at the Geographical Society in the afternoon. In the evening went to give a lecture at Mr Holland's hall in Aldgate, on the Arctic Regions with magic lantern views, to factory girls and their male relatives…These floor girls work 12 hours a day and have wretched homes, and Mr Holland has provided this place for them to spend the evening and get cheap refreshments, supplying an entertainment once a week. They seemed much interested and pleased; singing hymns at the beginning and end, and twice at intervals during the lecture. It went off very well. Afterwards some very interesting conversation with Mr Holland.[725]

This entry usefully lends weight to why and how, in the eyes of some, the lantern might be perceived as a medium associated not only with women

[721] Reeves, *Recollections of A Geographer,* 34.
[722] Reeves, *Recollections of A Geographer,* 35.
[723] Jones, Measuring the world, 334.
[724] RGS CRM/ 1/6 1885 – 1887 VI, 1886 7th April, 27
[725] RGS CRM/ 1/6 1885 – 1887 VI, 1886 7th April, 27.

and children but also, owing to the reference to hymns, with religious activities. Thus I urge a detailed and nuanced understanding of the historical-geographies of technologies, and the perceptions of these, at the level of individuals, as well as institutions and disciplines. The reasons why Markham may have countenanced the use of the lantern for philanthropic purposes, but not in the Society's activities (if we believe the recollections of his former colleagues) require further scrutiny. Most especially because Markham, in the 1890s, became a champion of the lantern.

The international language of photography: the RGS and the Paris Société de Géographie's lantern practices

As seen above, Ryan has examined the origins and development of photographic practices at the RGS over the nineteenth century.[726] However, the interaction between the RGS and foreign geographical societies constitutes a largely yet to be explored territory of both competition and cooperation.[727] Hudson situated the rapid professionalization of geography in French universities in relation to imperialism and militarism.[728] The lantern found a place in this new educational environment; it featured in lectures at the Sorbonne in Paris from 1864 and in the scientific research of Marie Curie and Louis Pasteur.[729] Mackenzie alluded to the French geographical society's promotion of a notionally pure, that is scientific, geography and the divergence between the Parisian society and its regional counterparts in Bordeaux and Marseille that sought to invest in commercial

[726] Ryan, Photography, visual revolutions and Victorian geography.
[727] Bassin, The Russian Geographical Society, the "Amur Epoch", and the Great Siberian Expedition 1855-1863, 240-256; Livingstone, *The Geographical Tradition*.
[728] Hudson, The new geography and the new imperialism, 1870-1918, 12-19.
[729] Mannoni, *The Great Art of Light And Shadow,* 296.

geography.[730] Mackenzie interpreted a phase of hybridization as resulting in positive and revitalizing effects.[731] Whilst Bell underscored how 'Looking outwards to the globe was part of being modern, urban and cosmopolitan' her emphasis was on the metropolitan centres' role in propagating a vision of geography that could serve ideations of human progress and citizenship.[732] In the discussion of the RGS connections with its Parisian counterpart, the Société de Géographie in Paris, and the demonstrable strong personal connections between the secretaries of the societies, and other figures, I widen Bell's thesis and show that geography's ideal of international cooperation also emerged in the 1870s and 1880s at the RGS. Here I therefore add new perspectives to current understandings of the RGS photograph practices via a discussion of some of the photographic and lantern practices of the Société de Géographie in Paris.

Scholars, as seen above, have dwelt on the historical role of geography and exploration in furthering British and French imperial ventures, and the construction of imperial and national identities.[733] Here I show that photography, and an understanding of lantern-slide practices, demonstrates new national and trans-national networks of geographical knowledge making. The Société de Géographie in Paris first used a lantern to illustrate lectures on physical geography and astronomy in 1875, just over a decade before the RGS started to do so, when the lantern was used on five occasions to its members.[734] However, it was not until 1878, when

[730] Mackenzie, The provincial geographical societies in Britain, 1884 -1914 in Bell, Butlin and Heffernan (Eds), *Geography and Imperialism, 1820-1940*, 93.
[731] Bell, Reshaping boundaries, 155.
[732] Bell, Reshaping boundaries, 155.
[733] B. Sèbe, The making of British and French legends of exploration, 1821-1914, in D. Kennedy (Ed), *Reinterpreting Exploration The West in The World*, Oxford University Press, 2014, 109-131.
[734] Société de géographie (France), O. Loiseau, & Bibliothèque nationale de France. Galerie de photographie. *Trésors photographiques de la Société de*

the Société acquired new and larger premises on Boulevard Saint-Germain, that lantern-illustrated lectures were made free and open to the public. In these 'conferences', or lectures, the optical instrument firm of Alfred Molteni operated the lantern.[735]

As was the case at the RGS, the Société's central committee held concerns that the lantern would vulgarize learning. However, as Loiseau demonstrated, there was a strong reform movement in France to democratize education and many international figures of geography, including Peter Kropotkin, Louis Vivien de Saint-Martin, Paul Vidal de la Blache, Gaston Tissandier and Elisée Reclus many of whom had ties to both the RGS and the Société de Géographie in Paris, championed the use of lantern-slides in geographical science and education.[736] The Société's lantern projectionist, Alfred Molteni was also a supporter of visual education.[737] In contrast to Mackenzie's assertions, this period saw the fostering of strong connections between the Société and publishers of French educational materials and teaching aids such as Hachette and Flammarion.[738] Reclus and Kropotkin, notably, had, over the last decades of the nineteenth century, an on-going connection to the RGS, but there were further, and older, bridges between the Parisian society and its London counterpart. Bates had met with the Société's Vice-President D'Avezac at the BAAS meeting in Norwich in 1868 and corresponded with him and C.

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géographie. Bibliothèque nationale de France, 2006, 217.
[735] Mannoni, *The Great Art of Light And Shadow,* 286-288.
[736] Mannoni, *The Great Art of Light And Shadow,* 268-73; Société de géographie (France), O. Loiseau, & Bibliothèque nationale de France. Galerie de photographie. *Trésors photographiques de la Société de géographie.* 219-20.
[737] Société de géographie (France), O. Loiseau, & Bibliothèque nationale de France. Galerie de photographie. *Trésors photographiques de la Société de géographie.* 2006, 220.
[738] Société de géographie (France), O. Loiseau, & Bibliothèque nationale de France. Galerie de photographie. *Trésors photographiques de la Société de géographie.* 2006, 220 and 224.

Maunoir, the Société's Secretary, throughout the 1870s.[739] Their numerous letters held by the RGS relate how the men swapped publications, newspaper articles, maps (of contemporary expeditions around the north pole and in Africa), as well as details of forthcoming publications and news of expeditions in progress.[740] Bates sent Maunoir copies of letters by Cameron from his journey across equatorial Africa, whilst Maunoir requested photographs of a map mentioned by Cameron in one of his letters and promised to refund the expenses incurred and to not publish it before the RGS did so.[741]

Further face-to-face encounters between RGS staff in both Paris and London took place and the RGS sent three affiliated members to the Paris Congrès de Géographie Commerciale at the Universal Exposition of 1878.[742] It is not clear if the lantern was used at the Congrès, but Edward Delmar Morgan, an RGS Council member throughout the period of this study, attended. He also visited the Société de Géographie in 1878-9.[743] It seems that this relationship was influential, at least, upon the RGS. From 1879, the section Proceedings of Foreign Geographical Societies within the RGS *Proceedings* presented details of papers delivered, speakers and

[739] RGS correspondence block 1871-80 Paris Geographical Society, from D'Avezac, Vice-President, to Bates, dated 26 November 1871, page 2. 'Veuillez être persuadé que je conserve un souvenir particulièrement agréeable de notre rencontre, déjà vielle de plusieures années, au meeting de Norwich […]'

[740] RGS CB 1871-80 Paris Geographical Society, Letter from C. Maunoir to Bates, dated 10 January 1876: 1; letter from Maunoir to Bates, dated 25 January 1876: 1; letter from C. Maunoir to Bates, dated 14 April 1876: 1; letter from C. Maunier to Bates, dated 23 November, 1876, page 1.

[741] RGS CB 1871-80 Paris Geographical Society, letter from C. Maunoir to Bates, dated 10 January 1876, pages 1-2. 'La lettre du 22 nov. à Sir Henry Rawlinson parle d'un "tracing" d'une partie de la route que le voyageur aurait envoyé avec des notes. Ce tracé est-il parvenu à la Sté de géographie de Londres et ne serait-il pas profitable d'en avoir une photographie? Ses dépenses que pourraient entraîner cette opération vous seraient immédiatement rembourses. Aucune publication ne serait faite avant celle de la Sté Rle géog de Londres […]'

[742] RGS CB 1871-80 Paris Geographical Society, letter from M. de Croizier to Bates, dated 27 June, 1878, page 1.

[743] RGS CB 1871-80 Paris Geographical Society, letter from C. Maunoir to Bates, [1879], pages 1 and 4.

significant publications at numerous German and French geographical societies with a range of stated purposes from the regional to the commercial.

However, the Paris Société had, with Bates's assistance, started to include details of foreign geographical societies from as early as 1876; these featured from 1871 in *La Géographie*.[744] In October 1878 Bates wrote to Maunoir of the RGS' intention to revise its *Proceedings*. Maunoir confirmed that a secretary, M. Thoulet, had agreed to report in English on the Société's meetings.[745] However, Maunoir stressed that 'It will be very [*sic*] difficult for you to publish punctually your paper on the 1 of each month or on another day! Unless it is quite independent from the meetings and the fellows of the Society […] unless you do it quite alone or only with few "collaborateurs"'.[746]

Maunoir sympathized with the more problems of rapid publication schedule of the *Proceedings*: 'C'est une tâche terrible que d'avoir à produire chaque mois une carte – et cela à jour fixe!'[747] A Mr. Hertz also became involved in relating information 'about the geographical things of this country' (France) to Bates.[748] In 1878 Maunoir also related to his British homologue a proposal, amongst the French geography societies, of a new scheme to allow fellows of one Society entry to the meetings of other foreign geographical organisations.[749] Maunoir elaborated that 'we think it

[744] RGS CB 1871-80 Paris Geographical Society, letter from C. Maunoir to Bates, dated 13 November, 1876, pages 2-3.
[745] RGS CB 1871-80 Paris Geographical Society, Letter from C. Maunoir to Bates, dated 22 October 1878, pages1-2.
[746] RGS CB 1871-80 Paris Geographical Society, letter from C. Maunoir to Bates, dated 22 October 1878, page 3. Maunier wrote in English.
[747] RGS CB 1871-80 Paris Geographical Society, letter from C. Maunoir to Bates, dated 22 October 1878, page 3.
[748] RGS CB 1871-80 Paris Geographical Society, letter from C. Maunoir to Bates, dated 21 Nov. 1878, pages 1-2.
[749] RGS CB 1871-80 Paris Geographical Society, letter from C. Maunoir to Bates, dated 22

interesting to have a kind of "lien" that could not be a trouble for any of our societies, as it is a matter of a purely moral character'.[750]

Godlewska has previously identified French geography's renaissance in the final decades of the nineteenth-century by the harnessing of the discipline to projects of national and social reform that were rooted in deep-reaching ethical and, close to just one hundred years after the French revolution, profound existential concerns.[751] Such issues were, in my view, transnational rather than solely of national, or indeed imperial, matters that also concerned Britain and British geography. Bates seems to have responded positively to Maunoir's suggestion to forge a connection between the two societies. The different scientific standards of geography and exploration, and the state funding of certain French expeditions, such as that of the ill-fated expedition across Africa led by Abbé Debaize which had set out with such high hopes of collecting scientific data, cannot have been lost on Bates either. Hudson drew parallels between a wave of 'new imperialism' and the emergence of the 'new geography' across Europe in the 1870s and 1880s.[752] Subsequently, Godlewska argued that French geography, that lost its way in the first half of the nineteenth century, was reinvented in the second half of the century as it harnessed itself to the emergent social sciences and nation state.[753] Heffernan has posited that subsequent to the defeat of France after the Franco-Prussian war of 1870-71 and the violent conclusion of the Paris

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October 1878, page 4.

[750] RGS CB 1871-80 Paris Geographical Society, letter from C. Maunoir to Bates, dated 21 Nov. 1878, page 2.

[751] A.M. C. Godlewska, *Geography Unbound French Geographic Science From Cassini To Humboldt*, the University of Chicago Press, 1999, 57-86.

[752] Hudson, The New Geography and the New Imperialism, 1870-1918, 13.

[753] Godlewska, *Geography Unbound French Geographic Science From Cassini To Humboldt*, 193-195.

Commune, geography and imperialism became more prominent, and urgent, political and intellectual concerns.

Throughout the 1870s the French national education system was radically reconfigured in order to foster a stronger sense of national and imperial identity such as that perceived to have been inculcated in Prussian soldiers.[754] In 1882 following Jules Ferry's report French education was nationalised.[755] Recognition of the cultural authority of geography by the French state ensued and the discipline rapidly became established in universities across the country. By 1900 twelve chairs in geography had been created.[756]

Whilst national and political changes in France were significant, the personal connections between the two societies are most pertinent here. A lesser-known figure of the Société de Géographie, who kept up the connection with the RGS, was its librarian James Jackson (1843 – 1895). Jackson was of British origin, but born in France, and a chemist by training. In 1880 he became a life Fellow of the RGS and, throughout 1880, corresponded with Bates about exchanging publications and obtaining copies of *Hints to Travellers* and the *Proceedings of the RGS*.[757] Jackson founded the Société's photograph collections, managed and produced a catalogue (consulting libraries in France, London and Harvard in the course of this in a manner that Keltie's tour of European geography teaching establishments in 1885 would emulate) of the library from 1881, and in 1885

[754] M. Heffernan, The Spoils of war in (Eds) Bell Butlin and Heffernan, *Geography and Imperialism, 1820-1940*, 222-223.
[755] Société de géographie (France), O. Loiseau, & Bibliothèque nationale de France. Galerie de photographie. *Trésors photographiques de la Société de géographie*.
[756] Heffernan, The Spoils of war, in Bell, Butlin and Heffernan (Eds), *Geography and Imperialism, 1820-1940,* 223.
[757] RGS correspondence block 6/1233, James Jackson to 1871 – 80, from Jackson to [Bates?]. letter from Jackson to the RGS, dated February 24th 1880 acknowledges his election to the RGS.

invited donations to the photograph library.[758] His efforts culminated in his official appointment as 'archiviste-bibliothécaire' or librarian and archivist in 1888.[759] Jackson's donations of 138 photographs of France and Italy [760] and his legacy of £377.47 to the RGS, which the Society invested in shares, demonstrates the strength of his connection to the London Society.[761]

Bates 'had a singular capacity for attracting personal affection,' Mill and Freshfield, recalled, and, 'long before his death in 1892 he came to be known and spoken of as "dear old Bates."'[762] As the above data shows, as Secretary, Bates was far more than an administrator. Renown for his hospitality, and predilection for extended Mayfair lunches, Bates fostered a chiastic culture of conversation that facilitated a generous exchange of knowledge between travellers, geographers and RGS staff. For Mill, the costs of this were outweighed by the benefits and 'did far more in advancing the welfare and usefulness of the Society than a correspondence which might cover reams of paper.'[763] The lack of additional insight into Bates' hand in shaping the Society is in part due to the limitations of extant sources, but by drawing on Bates's correspondence, we see that he put his generous nature and astute diplomatic skills to work in constructing bridges and chiastic, or reciprocal, exchange between the RGS, the Paris Société de Géographie and regional geography societies in Britain.

Given the connection between the two geographical societies either

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[758] Société de géographie (France), O. Loiseau, & Bibliothèque nationale de France. Galerie de photographie. *Trésors photographiques de la Société de géographie.* 208.
[759] Société de géographie (France), O. Loiseau, & Bibliothèque nationale de France. Galerie de photographie. *Trésors photographiques de la Société de géographie.* 208.
[760] Lieut.- Gen. R Strachey, 'The Anniversary Meeting, May 23rd 1887', *Proceedings of the RGS*, New Monthly Series 9 (7), (1887), 450.

[761] RGS Finance Committee Minute Books October 8 1896, 351 and November 5 1896, 360.
[762] Mill, *The Record,* 104.
[763] Mill, *The Record,* 104.

side of the Channel, and the relationship between Jackson and Bates, it is likely that the French society's lantern use was at least known to its British counterpart, if not a factor in the RGS' decision to found the photograph collection in 1884 and later to adopt the medium. The extant archival evidence at the RGS and the Société de Géographie does not indicate anything stronger than this personal connection, but Jackson and Bates should perhaps be understood as 'go-betweens' mediating between the two societies.[764] The strong ties between the staff of the RGS and the Société de Géographie, evidence the widening geographical concerns of the two societies. This uncovers important new transnational connections between the RGS and the Société de Géographie in Paris. The RGS's vigorous promotion of geography education in the 1880s and 1890s that this study shows is thus related to shared transnational, inter-imperial, and global, connections and concerns.

The improvement of geographical education, 1885-1886

The international networks of individuals and objects of lantern-slide spaces thus show that geography did not solely concern British imperialism or national phenomena. Instead in the context of social development in Britain they were shaped by educational concerns that included scientific subjects, such as geography, that straddled the humanities and the earth sciences even as these diverged towards the end of the nineteenth century, and the international roots of geographical knowledge-making. It was within the context of both conscious strategies to democratize geographical knowledge by the Council and overt criticism of the RGS that fears, outlined

[764] Schaffer, Roberts, Raj and Delbourgo (Eds), *The Brokered World: Go- Betweens and Global Intelligence, 1770-1820.*

above, arose that the use of the lantern would compromise the already precarious scientific status of geography and standing of the Society. It is within this context that the introduction of the lantern needs to be understood since the technology's use in meetings was deemed by some to be 'beneath the dignity of science'.[765] Here the RGS's educational schemes, motivated as they were both by an ambition to further the public importance of the Society and the discipline of geography and, simultaneously, to bring the perceived benefits of geographical ways of seeing to bear on the social questions of the day, demonstrates how this study informs, and is informed by, historical geographies of morality.[766]

Social and political changes in nineteenth-century Britain engendered significant shifts in the responsibility, structuring, purposes and geographies of education. Numerous historical geographers have connected the development of the new geography with British imperial interests.[767] Yet the Forster Education Reform Act of 1870 was the product, and producer, of a greater consciousness of the state of British education, and the teaching of sciences such as geography within wider educational programmes.[768] The concern that teaching methods and scientific education across Europe and the British Empire were more advanced than those in

[765] Keltie, Thirty years' work, 358.
[766] F. Driver, Morality, politics, geography: brave new worlds, in C. Philo (Ed), *New Words, New Worlds: Reconceptualisating Social and Cultural Geography,* Aberystwyth, 1991, 61-64; F. Driver, Moral geographies: social science and the urban environment in mid-nineteenth century England, *Transactions of the Institute of British Geographers 13* (1988) 275-287; S. Legg and M. Brown, Moral regulation: historical geography and scale, *Journal of Historical Geography* 42 (2013) 134-139.
[767] Hudson, The new geography and the new imperialism, 1870-1918, 12-19; Ryan, Visualizing imperial geography: Halford Mackinder and the Colonial Office Visual Instruction Committee, 1902-11, *Ecumene* 1, (1994), 157-76; Ryan, *Picturing Empire*; Maddrell, Empire, emigration and school geography: changing discourses of Imperial citizenship, 1880–1925; Ploszajska, *Geographical Education, Empire and Citizenship, 1870–1944.*
[768] Stoddart, 'That Victorian science', 17-40; White, *Thomas Huxley,* 205; D. Denisoff, Popular culture in F. O'Gorman (Ed.), *The Cambridge Companion To Victorian Culture*, Cambridge University Press, 2010, 147.

Britain indicates that educational reform and innovation originated not just from within Britain but globally. The liberal Lord Aberdare, President of the RGS (1880-85 and 1887-88), was the driving force behind the educational reform bills from 1867 onwards and throughout the 1870s.[769] The Society, as historical geographers have shown, also engaged in educational programmes of limited success at this time.[770] Throughout this phase the Society's aim was to bring geographical ways of knowing to greater prominence within the public affairs of Britain. The implementation of the Forster Act inaugurated the trend in the U.K. towards broader social inclusion and the collectivisation and nationalisation of education, and a new phase of creation of national and imperial citizenship.[771] The Society's renewed educational endeavors also followed in the wake of the 1870-75 Royal Devonshire Commissions that sought the promotion of science education, and reflected the rising public authority of science and its practitioners.[772] It was within the broader context of concerns with educational reform, and the social questions of the day, also examined in Chapter 6, that the national value of geography education was debated.[773]

The backdrop of geographical educational reform undertaken in the mid-1880s outlined above is central to understanding the adoption of the lantern by the RGS. After pushing for an increase in the promotion of geography education since 1876, the Council, at Freshfield's instigation,

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[769] Letters of the Rt. Hon Henry Austin Bruce G.C.B. Lord Aberdare of Duffryn, Vol II, Oxford, 1902, 102-111 and 263-269; Mill, *The Record*, 99-100; M. Cragoe, ODNB entry for Aberdare accessed 08/02/206: http://0-www.oxforddnb.com.lib.exeter.ac.uk/view/article/3732?docPos=2

[770] Ryan, *Picturing Empire*; Driver, *Geography Militant*; Jones, Measuring the world.

[771] Ploszajska, *Geographical Education, Empire and Citizenship, 1870–1944*; Driver and Maddrell, Geographical education and citizenship, 371–372; A. M. C, Maddrell, Empire, emigration and school geography: changing discourses of Imperial citizenship, 1880–1925, *Journal of Historical Geography* 22, 4, (1996), 373–387; White, *Thomas Henry Huxley*, 121-4.

[772] White, *Thomas Henry Huxley*, 121-2, 78-79.

[773] Vogl-Bienek and Crangle (Eds), *Screen Culture and the Social Question 1880-1914*.

agreed in 1884 to appoint an Inspector of Geographical Appliances 'to collect and arrange in the Society's premises all the best text books, maps, models, diagrams and appliances published in England or on the Continent, and to report thereon'.[774] John Scott Keltie was appointed Inspector of Geographical Education and dispatched to inquire into the state of geography teaching, methods and subjects across Europe and to a lesser extent in the United States.[775] Keltie's report on the position of geography at home and in other European countries and geographical institutions was submitted to the Council in May 1885.[776] Consequently, the Council decided to exhibit later that year the materials and appliances he gathered on his alternative grand tour in order to highlight the advanced state of European - especially German and French - teaching materials in comparison to their British counterparts.[777]

It was not until after the publication of Keltie's 'Report of the Proceedings of the Society in Reference to the Improvement of Geographical Education' (1885) that first, the attention of the RGS council and, later, public awareness of the poor state of British geography education in schools and lack of it in universities was really understood. The report, published in the RGS supplementary papers in 1886, was critical of the standards of teaching geography in Britain, especially in secondary schools, and thus became an important document in the establishment of

[774] RGS Committee Minute Books, Education Committee, Freshfield Memorandum, 24 March 1884; Markham, 173.
[775] Stoddart, The RGS and the 'New Geography'; Wise, The Scott Keltie report 1885 and the teaching of geography in Great Britain, 367; T. Ploszajska, *Geographical Education, Empire and Citizenship, 1870–1944*, doctoral thesis submitted to Royal Holloway: University of London, 1996.
[776] Wise, The Scott Keltie report 1885 and the teaching of geography in Great Britain, 370.
[777] J. S. Keltie, 1886 Geographical Education Report to the Council of the Royal Geographical Society. Suppl. Pap. RGS 1: 439-594.(494); Wise, The Scott Keltie report 1885 and the teaching of geography in Great Britain, 371 – 372.

geography within British academic settings.[778] The advanced state of teaching in Germany and France demonstrated by Keltie made clear Britain's lack of progress, notably in some of the country's public schools where the classical model of education still dominated.[779] The importance of geographical education was felt in the UK. With the result that support for the RGS educational activities gathered. This occurred on the simultaneous grounds of competition and humanistic cooperation on regional, national and international scales.

Neither the exhibition, held at 53 Great Marlborough Street throughout December 1884 and January 1885, nor the report, nor Keltie's numerous letters to Bates while he (Keltie) was on his educational odyssey across Europe, make explicit reference to either the lantern or lantern-slides. However, in commenting on Keltie's lecture, delivered in conjunction with the exhibition, Mr. Drew of Eton College praised the instruments on display

> for affording an idea of the relative distances from each other of the earth, sun, and moon, were of the greatest value, especially that fitted with the screen, as it was a very good method of teaching what was very difficult to convey - the persistence of the axis of rotation and the changing direction of the plane which divided light from the dark.[780]

This would imply that a type of episcope or epidiascope, as Walford argued, may have projected an enlarged image of a moving model that showed the circulation of the planets in the solar system on to a screen.[781]

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[778] Jones, Measuring the world, 330.
[779] D. W. Freshfield, The Place of Geography in Education, *Proceedings of the RGS*, New Monthly Series 8 (11), (1886), 699.
[780] J. S. Keltie, On Geographical Appliances, *Proceedings of the RGS, New Monthly Series* 8 (2), (February, 1886), 125.
[781] R. Walford, *Geography in British schools, 1850-2000: Making A World Of Difference*, Woburn Press, 2001, 63.

Additionally, one of the three lectures organized in conjunction with the exhibition, and in which visual aids and apparatus for the teaching of geography and geographical imaginations and learning processes were discussed at length, contained a reference to the lantern. As Ryan noted, this came from RGS Vice President Francis Galton in his introduction to the second lecture associated with the exhibition, 'On Geographical Appliances' given by Keltie.[782] Galton remarked that:

> There were two or three appliances necessary in geographical education which hardly came within the limits of the Exhibition but which still deserved mention. He was very strongly convinced of the necessity of devising some simple forms of laboratory experiments that could be performed before a class, and show the principal processes going on in physical geography. Then there were magic-lantern slides [sic], which formed a very suitable apparatus for effectively bringing home to the conceptions the physical features of the earth. True it was that such appliances appealed only to the sense of sight, but there were other influences capable of imparting geographical knowledge besides the faculty of seeing.[783]

Such assertions strongly suggest that the lantern was <u>not</u> a feature of the exhibition. It is also noteworthy that Galton's experimental visual scientific methods were manifold.

<u>Francis Galton: educationalist</u>

A desire to explore the gamut of human senses scientifically, and to emphasise the range of senses through which teaching and learning might be undertaken, notably in relation to geography, and the plurality of expressive forms in which the experience of travel could be represented, is discernable across Galton's life. This is visible in his support of the

[782] Ryan, *Picturing Empire,* 150.
[783] Keltie, On geographical appliances, 122.

commercial photographer Samuel Bourne's work in 1859,[784] his own research into the visual characteristics of ethnic and cultural types via the Anthropometric Laboratory of 1885, his multiple-edition works *The Art of Travel or, Shifts and contrivances available in wild countries* (1855) and *Vacation Tourists* (1861 onwards).[785] Galton was conscious of the importance of the imagination, methods of 'visualising' and material supports for these in teaching, learning and scientific research (as John Tyndall and Charles Darwin had been).[786] His motivations were, if not wholly philanthropic, then partly derived from a sense of moral purpose. This is evidenced from as early as 1855 when he delivered lectures on the arts of campaigning to soldiers at Aldershot, and which he illustrated by 'sketches and models and a small library'.[787] Then he was motivated to undertake this teaching upon reading of the lamentable conditions in which British soldiers in the Crimean War found themselves in, their lack of equipment and training in basic survival skills.[788] He was also sensitive to methodology in teaching, explaining that 'Next as regards teaching *the hand* I am collecting a motley stock of very simple tools and raw materials, planks, logs, twigs, canvas, cloths and everything necessary for making with the hand those very things that you will see pictured in the museum; I urge you to come and make use of them.'[789] The aim of these 'field lectures' and the experiments demonstrated in them was, Galton explained, to convey knowledge to the intelligent novice and 'handiness' with a range a

[784] Ryan, *Photography, Geography and Empire, 1840-1914*, 59.
[785] F. Galton (Ed), *Vacation Tourists*, MacMillan & Co., 1860.
[786] Discussion after E.G. Ravenstein, On the Aims and Methods of Geographical Education, *Proceedings of the RGS*, New Monthly Series 8 (2), (1886), 119.
[787] Pearson, *Francis Galton, Life, Letters and Labours*, Vol. II, CUP, 1924, 13-17; Driver, *Geography Militant,* 63.
[788] Pearson, *Francis Galton, Life, Letters and Labours*, 13-17.
[789] F. Galton, 'Arts of Campaigning, an Inaugural Lecture delivered at Aldershot, John Murray, London, (1855) [no page reference given] quoted in Pearson, *Francis Galton, Life, Letters and Labours*, 17.

materials from fire, to wood, which would assure survival in the field.[790] From this brief overview of Galton's expansive scientific imagination, it is clear that he wielded a significant influence upon the Society and geography, encouraging the adoption of new technologies such as lantern-slides for scientific research and public communication. As well as this his promotion of embodied learning if usefully situated in relation to recent studies in the history of science of 'the mindful hand'.[791] I do not want to suggest that Galton alone was of significance. The 'mindful hands' of a number of other historical actors shaped the RGS lantern-slide collections and attendant practices.[792] Although widely associated with creating anthropometric types and for the theory of eugenics Galton must, as I show here and in subsequent chapters, be set a wider frame that takes in his activities across a range of societies and, at the RGS, his dedication to the promotion of geography education.

These educational endeavours of the RGS were just one aspect of a more extensive nation-wide concern. For example, the Colonial and India Exhibition held in South Kensington in London from May to October 1886 included a number of lantern-slide lectures about education and science by colonial states, notably that of Victoria in Australia, New Zealand and Canada.[793] Leading RGS figures, including Galton and the chemist and liberal politician, John Lyon Playfair, who participated in the Exhibition may well have been aware of this.[794] The Exhibition also instigated a conference

[790] F. Galton, April 5, 1858.
[791] Roberts, Schaffer, Dear (Eds), *The Mindful Hand,* 2007.
[792] Roberts, Schaffer, Dear (Eds), *The Mindful Hand,* 2007.
[793] Anonymous, *The Catalogue of Exhibits in The Victoria Court,* John Ferres, Government Printer, Melbourne, (1886), 40.
[794] Anonymous, *The Catalogue of Exhibits in The Victoria Court.*

on 'The Position of Science in Colonial Education'[795] where comparisons between education in Britain and the colonies were made.[796] Thus the RGS was not inured from wider imperial educational reforms. It is significant that key figures within the RGS, who also happened to most vociferously support geographical education, were conscious of the methodological potential of the lantern at this point. Galton himself already expressed views about the lantern in December 1886 and, as I explain below, already employed the lantern in lectures at the RAI and the RI by this time.

Regionalizing geographical societies

Related to the above are the connections between the RGS and what were, in the mid-1880s, the newly founded provincial geographical societies of Britain. The practices of the geographical projections spaces of the RGS were shaped as much by key figures close to the Society such as Galton, as by other British geographical societies and the concerns with education that they mediated. In underscoring the imperial, utilitarian and commercial motivations of the British provincial geographical societies in metropolis beyond London, Mackenzie advocated that the RGS was 'neither utilitarian nor imperial enough' for provincial municipal tastes and that this is what drove the growth of provincial geography societies.[797] Yet his analysis barely touched upon the educational schemes of these societies and the relationship between both these, imperialism and social questions of the day. The connections between the RGS and the provincial societies, and the fact that the latter were founded at the very time when the RGS was

[795] W.L. Carpenter, The position of science in colonial education, *Science* 8 (199), (Nov. 26, 1886), 491-498.
[796] Carpenter, The position of science in colonial education, 498.
[797] Mackenzie, The provincial geographical societies in Britain, 1884 -1914 in Bell, Butlin and Heffernan (Eds), *Geography and Imperialism, 1820-1940*, 95 and 99.

investing in geography education were overlooked. So too was the extent and longevity of the co-operation over geography education between London and its Manchester and Edinburgh counterparts so soon after their founding.[798] The Manchester Geographical Society (MGS), for Hudson was the product of imperial and mercantile interests.[799] Whilst for Mackenzie the MGS's preeminent concern was with 'geography as an aid to statecraft, with the protection of the interests of Manchester manufacturers and merchants even if dressed up in the language of philanthropy'. [800] Mackenzie also alluded to the importance of the 'spectaculars', lectures by iconic figures such as H. M. Stanley, that drew large audiences and which engendered spurts in the Fellowships of the provincial societies.[801] No reference was made to either the magic lantern or lantern-slides though. As well as this, the three As of Africa, Antarctica and the Arctic were important, Mackenzie stressed, as only those societies, such as those of Edinburgh and Manchester, that succeeded in moving beyond the areas of interest were sustainable. The societies such as those of Liverpool, Hull and Southampton that did not make it beyond the three As and which also 'stayed locked into a concept of geography as a combination of entertainment and commercial utility' failed.[802] Despite this Mackenzie neglected the educational activities of the provincial societies. Freeman later made steps to rectify this imbalance by acknowledging the important educational endeavors of the MGS.[803] Below I suggest that it was the

[798] Mackenzie The provincial geographical societies in Britain, 1884 -1914, in Bell, Butlin and Heffernan (Eds), *Geography and Imperialism, 1820-1940*, 93 – 124. Mackenzie does, nevertheless, emphasize his view that the Liverpool Geography Society was successful in its educational schemes (page 106).
[799] Hudson, The new geography and the new imperialism, 1870-1918, 12-19.
[800] Mackenzie, The provincial geographical societies in Britain, 1884 -1914, 95 and 99-100.
[801] Mackenzie, The provincial geographical societies in Britain, 1884 -1914, 109-110.
[802] Mackenzie, The provincial geographical societies in Britain, 1884 -1914,122.
[803] T. W. Freeman, The *Manchester Geographical Society 1884-1984, The Manchester*

mutually-constituting social and scientific concerns manifested in educational activities such as lantern lectures, at both the RGS and its sister societies, that was important in sustaining their Fellowships and public authority.

Naylor's examination of the practices of the West Cornwall Penzance Natural History Antiquarian Society (PNHAS) queried the traditional view of a single, absolute national, London-centred and university-produced tradition of geography.[804] That study provides a useful model for this thesis in its recognition of the significance of regional societies on wider scientific traditions. Studies such as that by Withers and Livingstone and Withers, Higgit et al. of the BAAS Section E in into which geographical subjects fell, recognize the diversity of urban traditions of geography in Britain.[805] The latter also identified different practices from that of the RGS in London. This study queries the centrality of the RGS to a notional epistemology of geography. Further contradictions to a former conception of an exclusively national 'tradition' of geography, and the sciences more widely, come from innovative visual practices of knowledge presentation with the magic lantern by multiple regional geographical societies, previously discussed above. When new regional geographical societies were established around the UK they potentially posed a threat to the RGS Fellowship numbers, the Society's finances and the authority of the RGS whilst simultaneously helping to promote the cause of geography, its knowledge-based economy and number of consumers. Though imperial interests dominated Hudson's analysis, he also suggested that it was not imperialism alone that

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Geographer 5, 1984, 3.

[804] Naylor, The Field, the museum and the lecture hall, 494-513; D. Harlan, The archaeology of lantern slides: the teaching slide collection of the Ashmolean Museum, Oxford in Crangle, Heard and van Dooren (Eds), *Realms of Light,* 203-210.

[805] Withers and Livingstone, Thinking geographically about nineteenth-century science, 2-3.

dynamized geography education from the 1870s onwards. Following the 1886 Keltie Report, Historians and classical scholars such as Professor J. Myres of Liverpool, and zoologist Professor A. Newton of Cambridge, each acknowledged the academic need for improved geographical education that would prepare students to understand issues of distribution in their respective disciplines.[806] Thanks to the report there was a growing awareness of the advanced state of geographical science and teaching in other European countries where there were thirteen professors and twenty-six geographical societies. Meanwhile in Britain there was not a single professorship in geography.[807]

In the spring of 1885, the Educational Committee of the then recently founded (in 1884) Manchester Geographical Society, had instigated its own report on geography teaching and canvased its members, female and male, with a questionnaire on teaching methods and apparatus employed in primary, private, secondary, or high schools.[808] The invitation produced numerous lengthy responses from local teachers, which were published in the Society's journal, and which evidence the use of the lantern beyond entertainment settings and for educational purposes. One of these was an undated letter from the un-named head mistress of the School of the Convent of our Lady of Loreto in Hulme, just outside Manchester, explaining how her teachers used a range of appliances including maps, globes, diagrams, engravings and specimens in junior and senior classes. She concluded the report with the statement that 'Geographical lectures are

[806] B. Hudson, The new geography and the new imperialism, 1870-1918, *Antipode* 9 (2), (1972), 18.
[807] D. G Moir, The Royal Scottish Geographical Society 1884-1959 early days of the Society, *The Scottish Geographical Magazine* 75 (43), 1959, 131.
[808] *Journal of the Manchester Geographical Society* 1, (1885), 144.

given each term, accompanied by magic-lantern illustrations.'[809] Mr. J. S. Thornton, a Manchester Head Master, anticipated the founding of the Geographical Association in 1893, in his offer to arrange geographical lectures to instruct teachers if 'any thoroughly competent gentleman who would give them at a reasonable rate, and more particularly if they were illustrated by photographic slides.'[810] The findings were shared with the RGS by the Manchester Geographical Society's dynamic Secretary, Eli Sowerbutts.[811]

Throughout 1886 the RGS Geographical Education Committee was concerned with organising the itinerary of the exhibition of Educational Appliances.[812] As such the exhibition perhaps warrants consideration as a 'travelling landscape-object' in its own right.[813] The progress of the exhibition across the UK was drawn up as geographical societies and teaching institutions expressed their interest in hosting it, throughout the year. A selection of the London exhibits travelled first to Manchester in March 1886 where 'some exhibits of a very interesting character' were added to the exhibition and seventeen lectures were delivered in conjunction with it although none appear to have been illustrated with lantern-slides,[814] and then on to Edinburgh in June and July and briefly to Huddersfield (in late September) and Bradford in October.[815] The Bradford

[809] Anonymous, Report of the Education Committee, *Journal of the Manchester Geographical Society* 1, (1885), 327.
[810] Report of the Education Committee, *Journal of the Manchester Geographical Society* 1, (1885), 331.
[811] Journal of the Manchester Geographical Society Vol. I. - Nos. 7, 8, 9. - July, Aug, Sep, 1885, Manchester Geographical Society Education Report Questionnaire.
[812] RGS Committee Minute Books, Geographical Report Committee, January 11, 1886, 138; Geographical Report Committee February 19, 1886, 148.
[813] della Dora, Travelling landscape-objects.
[814] Report of the Education Committee, *Journal of the Manchester Geographical Society* II (1886), 141.
[815] RGS Committee Minute Books, Geographical Report Committee, January 11, 1886, 138.

School Board also desired that Keltie deliver a lecture.[816] The son of the philanthropist and founder of the philanthropically-endowed Salt Schools, Shipley, Yorkshire, Titus Salt,[817] also requested to host the exhibition and 'the loan of any objects belonging to the R.G.S. which would interest or instruct their people as maps…models, specimens, or other objects which may be fitting for their purpose' to be displayed at the opening of a new School of Art and Science.[818]

The ambiguous utility of photography

It was within the context of the Society's greater support of educational initiatives, and the lantern's wider deployment for religious and commercial purposes outlined in Chapter 2, that opposition to the medium arose within the RGS. This was founded on concerns that it would compromise the precarious scientific status of geography and standing of the RGS. Indeed, the use of lantern-slides was deemed to be 'beneath the dignity of science'.[819] Those Council members who opposed the lantern may have also been those who most strongly promoted a scientific methodology for geography. This view can in part be discounted by the discussion I provide in the next chapter of the reaction to Halford Mackinder's 1887 'Scope and Methods of geography' lecture. Here lantern-slides were therefore not then 'gorgeous and compelling,' as Rose argued. Nor were they projected solely in a darkened academic lecture theatre, as Nelson posited.[820] At the RGS,

[816] RGS Committee Minute Books, Geographical Report Committee February 19, 1886, 148.
[817] D. James, ODNB entry on entrepreneur and philanthropist, Titus Salt http://0-www.oxforddnb.com.lib.exeter.ac.uk/view/article/24565. Accessed 01/ 02/ 2016.
[818] RGS Committee Minute Books, Geographical Report Committee February 19 1886, 148-149.
[819] Keltie, Thirty years' work, 358.
[820] Nelson, The slide lecture, 433; Rose, On the need to ask how, exactly, is geography 'visual'?, 216.

both the form and truth status of the lantern were thus discussed and debated, in contrast the Nelson's assertions.[821]

The opponents of the lantern described it as a 'Sunday school treat.'[822] As demonstrated by Gärtner and Eifler the lantern featured commonly in Sunday School entertainments from the late 1880s onwards, and for wider religious propagandizing.[823] However, Some of nineteenth-century's most famous explorers adopted the magic lantern for use on their travels in 'the field'. The initial purpose of David Livingstone's travels in Africa was to missionize and disseminate knowledge of Commerce, Christianity and Civilization.[824] The lantern was one medium via which he did this by displaying slides of biblical scenes. A letter from Livingstone, then in the Pungo Androngo region of Angola, addressed to Sir Roderick Murchison, RGS President in 1854, described the Louda chief, Shinte, who viewed these scenes as visited him in the night as 'greatly delighted with some scriptural pictures which I showed him from a Magic Lantern.'[825] Thus within the practice of exploration and the RGS circles the technology of the lantern already had a complex lineage in which religion, geographical knowledge making through exploration and instruction did not necessarily sit well together. Moreover, the common use of the medium for the

[821] Nelson, The slide lecture, 433
[822] Mill, *The Record,* 103.
[823] T. Gärtner, The Sunday School Chronicle: Eine Quelle zur Nutzung der Laterna magica in englischen Sonntagsschulen. [A source for studying the use of the magic lantern in English Sunday Schools]. 25–35; T. Gärtner, The church on wheels: travelling magic lantern mission in late Victorian England,129–41 in K. Eifler, Between attraction and instruction: Lantern shows in British poor relief, *Early Popular Visual Culture* 8 (4), (November 2010), 363–384; Eifler, Between attraction and instruction: lantern shows in British poor relief, 363–384.
[824] See for example President Grant-Duff's introductory remarks to Henry Morton Stanley's Emin Pasha Relief Expedition at the Royal Albert Hall in 1890 (Geographical Results of the Emin Pasha Relief Expedition Proceedings of the Royal Geographical Society and Monthly Record of Geography May 5th, 1890: N.S. 12, 328).
[825] RGS David Livingstone correspondence block 2/6/3, Livingstone letter to Murchison, dated 24th December 1854, from Pungo Androngo, Angola, (page 7). The region is c. 400 km east of the present capital of Angola, Luanda.

instruction of what were by nineteenth-century definitions perceived to be 'uncivilized' or 'primitive' peoples, that today we would more sensitively, though in many ways equally inadequately, term 'indigenous peoples', informed their objections of those opposed to the lantern.

Freshfield, Keltie and Mill were involved in the incorporation of the lantern into the Society's activities acceded to positions of power within the RGS Council in the early twentieth century and were thus able to relate their view of events and write the history of the Society from their perspective. When they recalled their involvement in the Society in the 1880s, these individuals remembered the debate over the technology and believed it was significant enough to make frequent references to the dissent it caused and the strategies adopted to overcome it.

The previous section illuminated the contentious nature of perceptions of visual media amongst figures central to the RGS. The lantern's adoption was closely imbricated in the Society's revived promotion of geography education from c.1885 onwards, and by its endorsement of photography as a method of geographical observation and evidencing. However, there was in the 1880s considerable uncertainty surrounding the practice of photography.[826] Photographs came under attack in Lord Campbell's obscene publications act of 1857.[827] They were, in the 1870s, also cited amongst the manifold sins of degenerate popular culture of the metropolis by the Scottish journalist Robert Buchanan. He associated photographs with licentiousness, sensualism and scientific materialism.[828] It is perhaps little wonder that the RGS resisted the inclusion of 'undignified'

[826] Tucker, *Nature Exposed: Photography as Eyewitness in Victorian Science;* Dawson*, Darwin, Literature and Victorian Respectability.*
[827] Dawson, *Darwin, Literature and Victorian Respectability*, 4-5 and 116-161.
[828] Dawson, *Darwin, Literature and Victorian Respectability*, 16 – 21.

illustrations in its journal up to 1879.[829] Such perceptions, as I will go on to explain, may thus have coloured the RGS's engagement with the magic lantern.

Throughout the 1860s and 1870s due to the expense and complexities of reproduction, photographs were not yet a common feature of published accounts of travels. Instead, the reputation of explorers was more dependent upon their perceived social standing and rhetorical skill. Consequently, it was not until photography was endorsed in publications such as *Hints to Travellers* and the *Proceedings,* the Photograph Collection was founded in 1884 and, finally, the lantern embraced, that photography became a common method of evidence gathering in the field and an integral feature of lectures.[830] This concurs with Ryan's view that: 'Much of the meaning and revolutionary impact of photography within geographical circles depended not only upon practices of observation in the field but also upon contexts of display and reproduction enacted in metropolitan centres of science.'[831]

Technological advances impacted the visual practices of geography too. In the 1880s photography became cheaper, easier, safer and more reliable a medium thanks to the development of the Kodak camera and dry plates and gelatin film; 'Travellers and explorers could rely on gelatine film and handheld cameras to record their journeys'.[832] Despite photography's limitations, Ryan asserts that by 1890 it had become 'firmly established as a tool of geographical exploration.'[833] Much attention has focused on the work of the commercial photographer and traveller Thomson in promoting the

[829] Jones, Measuring the world, 326.
[830] Ryan, *Photography, Geography and Empire, 1840-1914*; Ryan, *Picturing Empire.*
[831] Ryan, Photography, visual revolutions and Victorian geography, 222.
[832] Ryan, Photography, visual revolutions and Victorian geography, 218 and 228.
[833] Ryan, Photography, visual revolutions and Victorian geography, 218.

camera as a legitimate instrument of geographical science 'for recording the topographic structure and ethnological character of foreign places and peoples.'[834] His contribution to *Hints to Travellers* and instruction courses in photography were the principal avenues via which this occurred.[835] However, whilst Thomson was undoubtedly significant, his contribution to the practice of photography within geography has been somewhat over-estimated, as was his view of his own involvement in bringing the lantern into RGS activities. Figures other than Thomson, as the above section on the exchange between the RGS and its Parisian sister-society and the chapters below suggest, played significant supporting roles in the Society's authorization of photographs and lantern-slides.

From 1866, the year in which he became a fellow of the RGS, Thomson had delivered lantern-illustrated lectures on his travels in Thailand and Cambodia to The Edinburgh Photographic Society and exhibited 'a series of his original photographs of scenery, architecture and people, 'by aid of the lantern'.[836] Then in 1872 Thomson held an exhibition of his work at the Royal Asiatic Society in Shanghai and used the lantern to display transparencies. It was reported that the exhibition and projected photographs deserved praise 'should the miserable quality of the Shanghai gas not interfere with their exhibition, by means of the oxy-hydrogen light'.[837] Thomson was significant in his early advocation of the use of photography as an instrument of artistic and scientific value.[838] Additionally, this he was further involved in bringing photography and practices of

[834] Ryan, Photography, visual revolutions and Victorian geography, 199 – 200.
[835] Ryan, Photography, visual revolutions and Victorian geography, 199 – 200.
[836] Edinburgh Photographic Society', 1866 in Parker, John Thomson, 465.
[837] E. S. Parker, John Thomson, 1837-1921 RGS Instructor in Photography,*The GJ* 144 (3), Nov., (1978), 467.
[838] Ryan, Photography, visual revolutions and Victorian geography.

visualization closer to the practices of the RGS via the exhibition of his photographs arranged by the Society such as at the Geography Congress held in Paris in 1875.[839] It was also in 1875 that the Société de Géographie started to display lantern-slides in its meetings.[840]

Thomson's influence upon the RGS and a growing body of trained geographers has not, to date, been fully measured and there remains a gap in historical geographical understandings of his role at the Society. Towards the end of 1880 the RGS considered offering lessons in photography in addition to those in surveying by the Map Curator, John Coles.[841] Other notable London institutions such as the Royal Polytechnic Institute had offered instruction in photography for some time. The RPI first did so in early 1853 and by 1882 it also offered evening courses in photography.[842] At the RGS it was only in 1886 that instruction in photography was made available to students who had already passed the Society's surveying course.[843] Thomson was appointed as instructor. In Thomson's own words 'from Sir H. Stanley onward the leading explorers sought my instructions so enabling them to secure excellent photographic records of their routes'.[844] Many of these photographs were remediated into lantern-slide form.

In light of the synchronicity in 1886 of instruction in photography at the RGS by Thomson and the Society's use of the lantern, it is perhaps not surprising that Thomson was also amongst those involved in this first use of

[839] RGS correspondence block 1871-1880, letter from Thomson to Bates, 12th June 1875.
[840] Société de géographie (France), O. Loiseau, & Bibliothèque nationale de France. Galerie de photographie. *Trésors photographiques de la Société de géographie.* Bibliothèque nationale de France, 2006.
[841] Ryan, *Picturing Empire*; Jones, Measuring the world; Ryan, Photography, visual revolutions and Victorian geography.
[842] Weeden, *The Education of The Eye*, 42.
[843] Jones, Measuring the world; Ryan, Photography, visual revolutions and Victorian geography.
[844] RGS CB8 1911-192, letter from John Thomson to Arthur Hinks, dated November 7th 1917, page 2 in Parker, John Thomson, 469.

the medium. Thomson later pointedly reminded the Society of this in a letter that stated,[845]

> I was appointed Instructor in Photography to the Society in January 1886, and have been engaged for over fifty years in promoting Geographical photography by instruction and illustrating my own published books. I may also note that, in the early days I urged, eventually with success, the use of lantern-slides at the Evening meetings.[846]

Thomson referred to his role in the adoption of the lantern not just once, but on two occasions. Another letter from Thomson conveys a sense of egregiousness on the part of Thomson concerning the overlook of his role in bringing the lantern to the Society in Keltie's lecture.[847] Thomson stated

> I may say when I became Instructor to the Society my object was to prepare other travellers to adopt the camera to illustrate their journeys, and my efforts proved not entirely futile as shown with the ultimate introduction of the optical lantern, and slides at the evening meetings.[848]

One cannot but wonder whether Thomson's comments were related to a sense of his part in bringing the lantern to the Society having been overlooked in Keltie's 1917 *Thirty Years' Work* lecture.[849] However, despite Thomson's perception of his own importance in bringing the lantern to the RGS, the chapters below demonstrate broader and, arguably, as significant instances of lantern use by other key figures.

The pathetic fallacies and the prejudices about the social and spatial, characteristics of the lantern, assessed above, and which, paradoxically, may have come from individuals most keen to promote a scientific

[845] RGS CB8 1911-192, Thomson to Hinks, Nov. 7th 1917, page 2.
[846] RGS CB8 1911-1920, Thomson to Hinks, Nov. 7th 1917, page 2.
[847] Keltie, Thirty years' work, 350 - 372. It contains no mention of John Thomson.
[848] Thomson to Hinks, Nov. 7th 1917, RGS CB8 1911-1920, 2.
[849] Keltie, Thirty years' work, 350 - 372.

geography, or who at any rate invoked science to justify their opposition to the medium, would eventually be overcome. The use of the lantern was in no way logical or assured though. As previously related, the terms of the debate about the lantern, for those both for and against its use, were apparently drawn from the field of science and changing notions and practices of what was then deemed scientific. A case was made for the medium based on the argument that 'projections from a dioptric lantern would enhance the scientific value of meetings'[850] and its utility as an instrument through which evidence could be presented.[851] Both Keltie and Mill refered to the 'surreptitious' introduction of slides, with Keltie specifying that 'It was only by strategy on the part of our present President that the use of slides was introduced'.[852] The then president was Douglas Freshfield who, later, would himself describe more emphatically the first uses of the medium as 'insidious'.[853] These individuals, and the strategies behind the gradual and planned introduction of the lantern, are further examined below.

Ackerman posits that the third quarter of the nineteenth century saw 'a war between romantics and rationalists' over the 'the use and value of the past'. A romantic, reactionary and religious perspective triangulated the degeneracy of the then present off an idealized past that represented 'a model in terms of both social organisation and individual conduct'.[854] Opposed to this was a radical, progressivist and secular evolutionary-

[850] Mill, *The Record*, 103.
[851] Although it is worth drawing attention to the fact that the longer-term picture of lantern-slide use shows that the medium was most often used, not in the scientific meetings, but in the evening ones. So maybe the debate was more about the promotion of geography education and science, politics, age dynamics and popularization: a struggle to define geography and its place and purpose.
[852] Keltie, Thirty years' work, 35.
[853] D. Freshfield's address at The Centenary Meeting: Addresses on the History of the Society, October 21, 1930, *The GJ*, (December 1930), 465.
[854] Ackerman, *The Myth and Ritual School J.G. Frazer and The Cambridge Ritualists,* 29-33.

inspired forward-looking view that was oriented towards a future in which a scientifically constructed society might be created and improved. The significance of the adoption of the lantern needs to be understood in this context since it was feared by some at the RGS that the projection of lantern-slides in meetings, would diminish the scientific credibility of the Society.[855] It was in response to the conscious strategies to liberalize geography by supporting geography education, incorporating visual media such as photographs and the lantern and to diversifying the Fellowship, that concerns that the lantern would compromise the precarious scientific status of geography and standing of the RGS arose. As I show below both views were idealistic, and in their respective ways, transcendental, in a romantic sense.

The first recorded instance of lantern use at an RGS Evening Meeting was on 12th April, 1886. Lantern-slides were projected after the delivery of the lecture 'Melanesian Cruises'. A close reading of this lecture reveals both an appreciation of the photographs projected, and the ambiguity of the status of photography. This section explores the communication, and possible dissimulation, within the *Proceedings*, of this first recorded instance of lantern-slide use. It was also in March that the manuscript of a proposed paper on 'Cruises in Melanesia, Micronesia, and Western Polynesia, in 1882, 1883, and 1884, and Visits to New Guinea and the Louisiades in 1884 and 1885' was received by the Society.[856] In the absence of the author, Captain Cyprian Bridge, the paper was read by Mr. Gervase Mathew, a crew

[855] Keltie, Thirty years' work, 358.

[856] RGS JMS 18/79: Cyprian Bridge Melanasian Cruises lecture. Some original photographs of this expedition survive at the Sydney Macleay Museum, University of Sydney. However, my investigation of digital copies of these photographs in March 2013 suggests there is much doubt surrounding their origin and producer(s). It is uncertain how many of the photographs were made by members of the crew of the HMS Espiègle. Given this I have chosen for the time being not to discuss these images more extensively.

member on board the H.M.S. Espiègle, thus, perhaps, offering further opportunities for occluding the responsibility for the 'surreptitious' introduction of lantern-slide images. The transcript of the paper was published in the next session of the Society in September 1886, five months after its initial reading on 12th April, with no mention of lantern-slides in the transcribed lecture or discussion. Instead the following text announced that 'The photographs exhibited on the table were taken by the sailors themselves from instructions they received from a photographer in Australia. […] In the absence of Captain Bridge the paper would be read by Mr. Gervase Mathew who was one of the officers on board the Espiègle'.[857] Only a short notice, which appeared five months earlier in May 1886, had appeared in the 'Report of Evening Meetings, Session 1885-6' at the back of the *Proceedings*: 'On the conclusion of this paper, a series of eighteen photographs of the scenery and people of the islands visited, were exhibited on a screen by means of the dioptric lantern and the lime-light. The paper, with map, will be published in a subsequent number'.[858] The second-class petty officers Perry and Phillips may have received instruction in photography from John Paine in 1884.[859] Additionally, although it is impossible to date precisely the decision to use the lantern, we have some indication of it. It may be that the event was not planned far in advance. On April 5 1886, an estimate for supplying the Map Room with the "Albo-carbon" light, a bright light produced by a combination of coal and gas used in magic lanterns, was declined by the Finance Committee.[860] However, it is apparent

[857] *Proceedings of the RGS*, New Monthly Series 8, (Sep., 1886), 565.
[858] Report of the Evening Meetings, Session 1885-6 in *Proceedings of the RGS,* New Monthly Series 8 (5), (May, 1886), 338 -9.
[859] G. R., Barker, *Refracted vision: nineteenth-century photography in the Pacific*, University of Sydney MA thesis, 2010.
[860] RGS Committee Minute books, Finance Committee meeting April 5 1886,

that the Society had in fact paid for albo carbon lights, a lime light lantern specifically for the exhibition of photographs and lantern-slides made, or arranged to be made from the crews' photographs, by the traveller and photographer, John Thomson.[861]

The available evidence suggests the incremental use of the lantern lends weight to the dissent over the medium. The not yet full synchronization of projected image and spoken word was duplicated in the gap in timing of the published transcript of the paper, *Melanesian Cruises,* and the earlier communication of the fact that the lantern had been used. H.W. Bates, as editor of the *Proceedings*, would have at least been involved in decisions about what information was included, or excluded, and the timing of its publication. The reviewer of the lecture requested that the printed text be supplemented by a map. [862] This entailed further delay between delivery of the spoken word and printed publication. This contrast in the synchronization of lantern-slides and lecture, and map and published text, highlights the controversial nature not only of the visual medium of photographs and the technology of the lantern, but also of representations of human manifestations of geography (which the text included many references to) as opposed to cartographic ones. The enduring predominance at this time of knowledge in the form of spoken word and written text as opposed to image is thus apparent.

[861] 'Mr. Bate (Albo carbon lights) £2.6.6 - J. H. Steward (Hire of lime light lantern for the exhibition of photographs on 12th April) 2.16.6 and J. Thomson (lantern-slides) 3.3.-' RGS Finance Committee Minutes, May 3 1886: 160.
[862] RGS JMS 18/79 Cyprian Bridge 'Melanasian Cruises' lecture: the blue inner slip cover is dated13th April 1886.

Yet despite the uncertain status of photographic images at that time,[863] the President, Lord Aberdare, suggested that the voyages of this particular naval vessel and crew had been elevated and made more useful to science through the instruction they had received in photography and their taking of photographs.[864] Closing the evening, in this instance the lantern also served to demonstrate the force's utility in knowledge making. This promoted photography as a method of geographical knowledge production that could be practiced by all.

Lord Aberdare, as President and Chair of the meeting, emphasized the fact that the sailors had learnt to take photographs through instruction from an Australian photographer.[865] In view of the fact that, in January 1886, Thomson's instruction in photography had just begun, this instance of the promotion of photographic methodology is noteworthy. The president's comments may have also served to promote the RGS courses in order to encourage audiences to be scientifically useful. Moreover, the exercise evidenced the value, not only of photography, but of the lantern. Indeed the lantern-slides were either made by Thomson himself or arranged to be made by him. The example therefore constitutes, firstly, an official public endorsement of the value of the technology to the RGS audience. The photographs projected by the lantern may also have provided Fellows with the additional incentive of seeing just how much public recognition they could attract for themselves, as well as serving the Society and science. This was just one of several early steps in bringing round the Officers and Fellows of the RGS to the use of the lantern. Yet, one should also be

[863] Ryan, Photography, visual revolutions and Victorian geography; J. Tucker, The historian, the picture and the archive, *Isis* 97 (1), (March 2006); K. Wilder, *Photography and Science*, Reaktion Books, 2009.
[864] Barker, Refracted vision: nineteenth-century photography in the Pacific.
[865] Bridge, Cruises in Melanesia, Micronesia, and Western Polynesia, 565.

mindful of an inverse perspective. Thomson's motivations in employing the lantern here were, perhaps, informed by the financial imperative of advertising his courses, as much as by loftier aspirations of serving science.

The occasion also gave Aberdare a platform from which to promote his own humanistic and liberal values. In what reads like a double-edged criticism of both the forces' conduct and of imperialism more generally, Aberdare advanced that if all officers were like Captain Bridge – 'men of such intelligence and humanity,'[866] 'many of the difficult problems as to the proper relations between semi-barbarous and civilised people would be satisfactorily solved'.[867] It is worth considering at this point whether Aberdare was suggesting that seeing and recording human subjects through the camera embodied not only a 'civilised' and even scientific act, but also an ethical and political one, which stated that such people were worthy of observation. At a time when the status of photography and photographers was uncertain,[868] this constituted yet another way of endorsing the medium and the suitability of the technology in the Society's practices.

A corpus of literature regarding photography's role in 'othering' and hierarchically classifying geographically diverse peoples and cultures in anthropometric ways exists.[869] A final remark from the South American traveller and archaeologist Alfred Maudslay encouraged the navy and imperial administrators to embrace a future role of serving the then still nascent social sciences by 'obtaining some knowledge of the natives of the

[866] Bridge, Cruises in Melanesia, Micronesia, and Western Polynesia, 567.
[867] Bridge, Cruises in Melanesia, Micronesia, and Western Polynesia, 567.
[868] Ryan, Photography, visual revolutions and Victorian geography; Tucker, The historian, the picture and the archive.
[869] E. Edwards, *Anthropology and Photography 1860-1920*, Yale University Press, 1992; V. R. Schwartz, and J. M. Przyblyski, *The Nineteenth-Century Visual Culture Reader,* Routledge, 2004; Ryan, *Photography, Geography and Empire, 1840-1914*.

Western Pacific, before they become influenced by foreign ideas and customs.'[870] In a period (pre-1887) when geography was not yet established within the traditional centres of learning such as universities and in which the wider social sciences were only semi-institutionalised in museums, rather than in dedicated departments, both the government funded armed services and the self-funding commercial and leisurely travellers had the potential to be useful producers of information and images.[871] The concern of scholars such as Edward Burnett Tylor with recording knowledge of remnants, living peoples who, to his mind, exemplified, preceding states of cultural evolution that had survived into a notional modernity is clear from Aberdare's comments.[872]

Although the RGS was the first geographical society in the UK to adopt the lantern, the Scottish Geographical Society (SGS) which had a London branch, illustrated lectures 'with limelight views' from 1887.[873] The Manchester Geographical Society (MGS), founded in 1884, was from the very first open to women. The MGS's first lantern illustrated lecture was delivered in October 1886.[874] It was not specified within the published transcript of the lecture that lantern-slides were shown.[875] However, the summary of the session's meetings, published separately, stated that in the twenty-third meeting 'By the assistance of Mr. C. Harris, Mr. Dennett's

[870] Bridge, Cruises in Melanesia, Micronesia, and Western Polynesia, 567.
[871] Ryan *Photography, Geography and Empire, 1840-1914,* 231.
[872] Herbert, *Culture and Anomie, 262-63;* Edwards, *The Camera as Historian*, 172-81.
[873] Moir, The Royal Scottish Geographical Society 1884-1959 early days of the Society, 187.
[874] 'The Congo: From A Trader's Point of View. By Mr. R.E. Dennett, of Banana, Congo, author of "Seven Years Among the Fjort.' [Delivered before the Members of the Society at the Manchester Athenaeum, Wednesday, October 27th, 1886.] *Journal of the Manchester Geographical Society* II, (1886), 283 - 306.
[875] Some evidence suggests that the use of lantern-slides was indicated by the inclusion of titles of projected images printed in bold capitals between paragraphs of text in published lecture transcripts. See for example 'Funeral' and 'Sambo Takes Cassia.' (*Journal of the Manchester Geographical Society* II 1886, 283-5).

sketches of the Congo region were shown by the lime-light, and added very considerably to the interest of the address.'[876] At the MGS further 'lime-light' or lantern-slide lectures followed in January, November and December 1887, but diagrams and objects collected on travels also continued to be displayed. Thus the innovations in terms of visual knowledge presentation that ensued from the RGS's first lantern use and the resistance with which this was greeted, discussed above, and its subsequent employment of the medium, assessed in the chapters below, took place chiastically within a wider British landscape of geographical projections.

Conclusion

This chapter discussed the relationship between the Society's visual knowledge making practices, visual and material collections, and adoption of the lantern and the gradual development of an international science of geography by outlining some of the close connections between the RGS and Société de Géographie in Paris. I argued that the Society's concern with educational initiatives and the establishment of geography as a subject in schools was also a factor in the adoption of the lantern. This study of the RGS lantern-slide practices reveals ways in which British geography and the RGS were both influenced by factors beyond Britain and the Society. I examined the relationship between the RGS and the early lantern-slide practices of regional geography societies such as the Manchester and Edinburgh geographical Societies. Finally, I have demonstrated the connections between the practice of photography, and photograph collections, and the use of lantern in the RGS.

[876] *Journal of the Manchester Geographical Society* II, (1886), 368.

Artifacts, as Lorimer and Spedding suggest, are meaningful and essential to disciplinary transmission through time and space.[877] Thus the journey of knowledge via 'travelling landscape-objects' such as lantern-slides is subject to translations, often via 'technologies, whether cutting-edge or obsolete', which themselves 'retain stories.'[878] The process of translation can be discussed in relation to the discursive geographical projections space. Here I have presented the imbricated commercial and scientific uses of the lantern by figures affiliated to the RGS and whom, in some cases, were most deeply involved in the first uses of the medium at the Society. This complexifies and situates the proposed adoption of the lantern, and the dissent this caused, within wider geographies of lantern use. It also clarifies the previously discussed negative characterization of the lantern by the RGS Fellows who disapproved of it by demonstrating general instances of propagandizing via the lantern. The medium had long been used by missionaries, but was also associated with key figures of geographical exploration and science and, significantly, their diverse aims. Nevertheless, the argument that the lantern could usefully serve the scientific objectives of RGS reformers was justified, given the growing frequency of lantern projections by professional scientists, albeit in scientific societies outside of academic seats of teaching, as well as in the promotion of imperialism in the 1870s and 1880s. Those who supported the use of the lantern were aware of this wider uptake of the technology for the communication of science. Thus in Chapter 6 I assess more closely the ways of seeing of the diverse individuals and groups who participated in RGS lectures, how they were mutually influential and how they shaped the

[877] Lorimer and Spedding, Excavating geography's hidden spaces, 297.
[878] della Dora, Travelling landscape-objects; Lorimer and Spedding, Excavating geography's hidden spaces, 298.

conceptualization of geography across the Evening and Technical meetings in order to understand the reception of lantern-slides and the powerful effects attributed to them.

CHAPTER 6. DISCIPLINING GEOGRAPHY

Introduction

Before the RGS's engagement with the lantern commenced in c.1886 other prominent scientific and cultural institutions to which the Society was connected were already doing so. [879] Scholars acknowledge the complexities of unraveling the nexus between the histories of popular and professional, commercial and learned categories of science in the nineteenth century. [880] As demonstrated in Chapter 5, the historical geography of the RGS' engagement with the lantern is also a story of the Society's wider involvement with other geographical societies and of the international exchange of knowledge. Consequently, and by employing the concept of 'travelling landscape-objects', I examine the circulation of the lantern in scientific and cultural organisations of London with connections to the RGS.[881] I argue that the geographical projections space of lantern-slide lectures in the 1880s and into the early decades of the twentieth century can be taken as a common space in which the interests, practices and 'practitioners of science,' 'would-be professionalizers' and 'popularizers of science', as Lightman called them, intermingled within the RGS.[882] Below I show that these groups were not mutually-exclusive and that, within the RGS and other London societies they can be seen to have co-existed,

[879] 'The following paper was read, in the absence of the author, by Mr. Gervase Mathew, of H.M.S. Espiègle, commanded by Captain Bridge:- "Cruise in the Western Pacific, including visits to the Caroline and Marshall Islands." By Captain Cyprian A. G. Bridge., RN. […] On the conclusion of this paper, a series of eighteen photographs of the scenery and people of the islands visited, were exhibited on a screen by means of the dioptric lantern and the lime-light. The paper, with map, will be published in a subsequent number.' Anonymous, 'Report of the Evening Meetings, Session 1885-6', *Proceedings of the RGS, New Monthly Series* 8, (May, 1886), 338 -339.
[880] Daunton (Ed), *The Organisation of Knowledge in Victorian Britain,* 4.
[881] della Dora, Travelling landscape-objects, 335.
[882] Edwards, Making histories, 13-34; Lightman, *Victorian Popularizers Of Science,* 9-13. Pratt, *Imperial Eyes.*

interacted in chiastic fashion and indeed, at times, been embodied within the same person and their activities across diverse geographical projections spaces. In doing so I invert understandings of the Society as a bounded entity that was the driving force of innovation in geographical practice.

In the second half of this chapter I present a case for reciprocity by questioning many socially-constructed binaries. In considering the RGS's renewed engagement with the methods and concerns of science in the 1880s and 1890s, and the diverse and changing strategies adopted by the RGS in mediating between its Fellowship and the ideology, methods, and ways of seeing of science. The resistance to, and support of, the lantern, by certain RGS officers is contextualised in relation to mid-nineteenth century geographies of lantern use for the purposes of knowledge communication, first, in the Oxford University Extension lectures of Halford Mackinder and, secondly, in Mackinder's keynote lecture of 1887 'The Scope and Methods of Geography'.[883]

Science and the lantern in London

The second half of the nineteenth century, as seen in Chapter 2, has been characterized as an era in which learned societies proliferated.[884] Following the explosion in lantern-slide use across a range of disciplines and sites for both entertainment and knowledge making purposes in London, the UK and abroad, arguably, this was the age of the lantern. Attracted by the light projected images, the medium of the magic lantern drew increasingly large audiences to the geographical projections space as innovations in technologies of light allowed a greater projection range from the lantern and

[883] Keltie, Thirty years' work; Mill, *The Record*; Reeves, *Recollections Of A Geographer*.
[884] Daunton (Ed), *The Organisation of Knowledge in Victorian Britain,* 2005.

a larger scale image, sometimes up to 7 metres wide, to be thrown on to the screen. It was thus, in part, thanks to these technological innovations that London institutions gradually became *societies* in which greater and more diverse audiences participated.

Additionally, scholars recognise the dispersed and fragmented nature of the geographies of science in the nineteenth century. New configurations of scientific practices of 'the material and imaginative landscapes of the metropolis' are being assembled.[885] In this regard Driver has exploded the notion of the RGS as a centre. For him the very notion of 'a 'centre' – the official mind at the heart of empire, as it were – has been put on the analyst's couch: what we now have to consider is not one mind, or one centre, but many.'[886] The findings I present below of a wider metropolitan landscape of lantern use by figures closely associated with the RGS supports the argument for the decentring of knowledge production on a flat spatial axis.

Stoddart argued that 'leading figures, such as Freshfield and Keltie, were instrumental in claiming for geography a subject matter, a method and a role, against the powerful claims of sister sciences.'[887] Practitioners of science also employed the lantern in edifying and instructional lectures for the visual demonstration of knowledge to a spectrum of audiences across a wide range of sites in London and across the UK. As stated by Stoddart, the RGS's relationship to science manifestly changed in the 1870s.[888] This followed from the death of four-times serving RGS President, Sir Roderick Murchison in 1871, and the publication of Charles Darwin's *The Descent of*

[885] Driver, Distance and disturbance, 81.
[886] Driver, Distance and disturbance, 81.
[887] Stoddart, The RGS and the 'New Geography', 191.
[888] Stoddart, The RGS and the 'New Geography'; Daunton (Ed), The Organisation of Knowledge in Great Britain.

Man, and Selection in Relation to Sex. Withers recalled Murchison's BAAS Section E presidential address of 1858 in Leeds, in which Murchison denied that geography was 'exhausted' and that there remained places yet to explore. For Murchison 'Exploration was key to geography; reports upon exploration key to the popularity of Section E'.[889] Since the 1860s, certain figures of the RGS, most prominently the gentleman of science Francis Galton, whose scientific interests and imagination were of extensive proportions, foresaw an alternative future for geography and the RGS. Galton elucidated his vision of a scientific geography with a defined place and visual methodology in his presidential address to Section E of the British Association at Brighton in 1872. He sought greater public and academic recognition for geography as a subject of scientific value.[890] With Murchison since deceased, Galton then as President of Section E, presented matters in a different light in 1872. For example, in his BAAS presidential address of that year, he outlined how geography was changing and described his vision of its future.[891] He asserted that

> The geographical work of the future is to obtain a truer knowledge of the world: I do not mean by accumulating masses of petty details, which subserve no common end, but by just and clear generalizations. We want to know the all that constitutes the individuality, so to speak, of every geographical district, and to define and illustrate it in a way easily to be understood; and we have to use that knowledge to show how the efforts of our human race may best

[889] C. W. J. Withers, Scale and Geographies of Civic Science: Practice and Experience in the Meetings of the British Association for the Advancement of Science in Britain and in Ireland, c. 1845-1900 in D. N. Livingstone and C. W. J. Withers (Eds), *Geographies of Nineteenth-Century Science*, 73-98.
[890] E. W. Gilbert, 'The Right Honourable Sir Halford J. Mackinder, P. C., 1861-1947'. *Geographical Journal* 110 (1/3), (Jul. - Sep. 1947), 95; Ryan, *Photography, Geography and Empire, 1840-1914*, RHUL PhD, 1996.
[891] F. Galton, 'Transactions of the sections: Geography', Report of the Forty-Second Annual Meeting of the British Association for the Advancement of Science, John Murray, 1873, 199.

> conform to the geographical conditions of the stage on which we live and labour.[892]

Finally, Galton noted that 'the career of the explorer, though still brilliant, is inevitably coming to an end' and that if the geography section was 'to secure the attention of representatives of all branches of science,' it was essential that geography turn to 'principles and relations' rather than 'primary facts'.[893] He also referred to 'the class of subjects' in Section E that 'cannot be discussed except by a mixed assemblage, which includes persons who are keen critics though not pure geographers, and who have some wholesome irreverence for what Lord Bacon would have called '"the idols of the geographical den"'.[894] Thus in seeking to justify and to promote geographical science Galton referred to works of the sixteenth-century natural philosopher. Additionally, Galton appears to have celebrated the discursive tradition of collective knowledge making in BAAS meetings and the display of diverse perspectives that such occasions afforded.

Lieut.- Gen. R. Strachey, Scottish geologist Archibald Geikie and the British diplomat and President of the RGS, Rutherford Alcock, were also amongst those who voiced in public the changing tide of science and its impending impact upon geography.[895] In 1875 the sectional presidential address of General Sir Richard Strachey, another stalwart of the RGS and

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[892] Galton, 'Transactions of the sections: Geography', Report of the Forty-Second Annual Meeting of the British Association for the Advancement of Science John Murray, 1873, 198-202.

[893] Galton, 'Transactions of the sections: Geography', Report of the Forty-Second Annual Meeting of the British Association for the Advancement of Science, 198-202 in Withers, Scale and Geographies of Civic Science in Livingstone and Withers (Eds), *Geographies of Nineteenth-Century Science*, 73-98.

[894] F. Galton, Presidential Address to Section E of the BAAS, 1872,199 (total number of pages: 198 -203); M. Peltonen (Ed), *The Cambridge Companion to Bacon*, Cambridge University Press, 63

[895] Lieut.- Gen. R., Strachey 'Introductory lecture on Scientific Geography', *Proceeings of the RGS*, NS, March, (1877), 179 – 203*; A.* Geikie, Geographical Evolution, *Proceeings of the RGS*, (July, 1879), 422 – 444; Stoddart, The RGS and the 'New Geography'.

one of the group of reformers, revisited Galton's argument discussed above. Withers stated that Strachey highlighted the importance of inserting 'a more scientific geography' into an evolutionary framework via 'a concern with human-environment relationships', especially because of the ever-greater limitations on the 'field of topographical exploration'.[896] Alcock, though aware of this from 1874,[897] attributed the changing practices of geography to the shifting place of 'science' and, consequently, the creation of 'new exigencies' in his 1876 Presidential Address.[898]

Section E was dubbed the 'Ladies' Section,' implying, perhaps, that geography was facile and frivolous.[899] The lectures by popular explorers that were prominent in the section, Withers argued, were perceived by the leading men of science, as detracting from geography's scientific status.[900] A report from the 1894 Oxford BAAS meeting stated that attendance had been high because of the popular character of papers and discussions. This was, notably, due to 'the profuse and promiscuous use of the magic lantern' that was carried out to such an extent that the section became 'the attractive show-room of the Association'.[901] There was then, a strong awareness, at the BAAS of the range of audiences, 'scientists and amateurs', to whom it was necessary to adapt knowledge to ensure the Association's financial survival.

Complaints raised at the BAAS meeting of 1894 echoed those voiced at the RGS over the Society's first attempt in the late 1870s to introduce a

[896] Withers, Scale and geographies of civic science in Livingstone and Withers (Eds), *Geographies of Nineteenth-Century Science*, 73-98.
[897] Jones, Measuring the world, 318.
[898] Driver, *Geography Militant,* 64.
[899] Withers, *Geography and science in Britain, 1831-1939*, 15 and 93.
[900] Withers, Scale and geographies of civic science, 92 and 110-111.
[901] W. S. Dalgliesh, Geography at the British Association, Oxford, August 1894, Scottish Geographical Magazine 100, 463 in Withers, *Geography and science in Britain, 1831-1939*, 89.

more scientific stream of subjects. This is suggested by the view that 'Complaints are often made - they have been made this year – that the treatment of the subjects in some sections is so technical that it repels the lay members, who form the bulk of the membership of the association.'[902] However, the report went on to stress that this was not the case of the Geography section which was described as the 'happy hunting-ground of the unattached and amateur Associate'.[903] Despite this he felt that the popularity of geography was ephemeral and did not necessarily translate to success. Substantial sections of the audiences craved sensational stimulation, and responded most strongly to globe-trotters, especially women. Even the sins of tedious travel narratives 'of a holiday spent in Armenia, or in Mexico, or in the desert of Libya, or in Montenegro, or in Arabia' would be forgiven if they were accompanied by what the BAAS official programme described as 'optical projections,' ie. ''in common parlance' lantern slides''.[904] As at the RGS the BAAS also saw tensions around the use of the lantern as the sciences professionalized and specialized across the nineteenth century.

Despite the need to cater for mixed audiences at the Section E meetings, by the later nineteenth century Presidents and leading geographers speaking in the section's meetings stressed the scientific aspects of geography. Withers noted that 'the schism' in Section E between specialist knowledge and the still nascent disciplinary identity of geography as a science 'was heightened by the use of technology (''magic lanterns'',

[902] Dalgliesh, Geography at the British Association, Oxford, August 1894, 89.
[903] Dalgliesh, Geography at the British Association, Oxford, August 1894, 90.
[904] Dalgliesh, Geography at the British Association, Oxford, August 1894, *Scottish Geographical Magazine*, 10 (1894), 463 in Withers, Scale and Geographies of Civic Science: Practice and Experience in the Meetings of the British Association for the Advancement of Science in Britain and in Ireland, c. 1845-1900 in Livingstone and Withers (Eds), *Geographies Of Nineteenth-Century Science*, 73-98.

maps and glass-plate slides), which lent an air of theatricality to the section's proceedings.'[905] This thesis starts to uncover diverse perceptions of the lantern, and the evolution of these within a short space of time between 1886-1894, specifically within the context of the RGS meetings. This study both confirms and subverts the assertion that the lantern technology was perceived by some as sensational and unscientific. The use of the lantern at the RGS, and the propagandizing of scientific methods via the presentation of visual evidence, and insistent interpretation of this by Freshfield was, as I explain below, a notable factor in contributing to the tensions between the Fellowship and the Society that culminated in the debate over the admission of women in 1892-93.[906]

As well as the BAAS, there were close connections between the RGS and the RI. Between October 1868 and up to the end of May 1870, and before it moved to 1 Savile Row in 1870, the RGS's Monday night meetings were held in the RI lecture space that was equipped with a lantern.[907] From 1872 the lantern had been an integral part of science demonstrations for adult audiences at the RI in physicist Sir John Tyndall's lectures.[908] In the same year, and in an extensive lecture tour of the USA,

[905] Withers, Scale and Geographies of Civic Science in in Livingstone and Withers (Eds), *Geographies of Nineteenth-Century Science*, 73-98.
[906] Domosh, Toward a feminist historiography of geography, 95-104; Bell and McEwan, The Admission of Women Fellows to the Royal Geographical Society, 1892-1914, 295-312; Maddrell, *Complex Locations*, 27-33 and 58-9.
[907] Mill, *The Record*, 79-80; Following the reading of a letter from Sir R.I. Murchison, dated 6 October 1868, at the RI meeting of managers on Monday November 2nd 1868, it was resolved to grant permission to the RGS to use the d lecture theatre for the RGS's season. (R.I Archives Manager's Minutes 1853-1874, Vol. 11-12, 275); At the RI meeting of managers of July 5 1869, and following receipt of a letter from Sir R.I. Murchison dated 21 June 1869, it was agreed that the RGS would have the use of the RI lecture theatre for the next session (R.I Archives Manager's Minutes 1853-1874, Vol. 11-12, p311); R. I. Murchison Bart, Address to the Royal Geographical Society, *Proceedings of the RGS of London* 14 (4), (1869 - 1870), 287; Roderick Impey Murchison, Address to the Royal Geographical Society, *Journal of the Royal Geographical Society of London* 39 (1869), cxxxvi.
[908] Hankins, and Silverman, *Instruments and the imagination,* 69; Schaffer, Transport phenomena, 71-91.

Tyndall's use of the lantern, actually described as 'a camera,' became famous.[909]

Galton had experimented with the lantern in the creation of composite portraiture and the reproduction of superimposed images by projecting images from several magic lanterns from 1878.[910] Such phantasmagoric, artifial images were considered to be scientific. However, in 1879 he was also able to demonstrate this technique of creating composites before a fashionable RI audience.[911] Galton was, moreover, a proponent of the provision of training in anthropometry by the RGS from 1884.[912] However, the Society only started to offer such training from 1895.[913] As seen in Chapter 5 he was also closely involved in the Society's decision to offer instruction in photography.

As well as the RI and the BAAS there was a good deal of cross-membership between the RGS and other London societies, and notably with the Society of Arts (SA). Significantly, many RGS Council and Committee members and Fellows were involved in the SA, most notably Galton, Lord Aberdare (RGS President throughout the 1880s bar 1885) and his wife, and Sir John Lyon Playfair, all of whom were supporters of educational reform.[914] Captain Abney,[915] also lectured at the SA and

[909] J. Song and S. Kyoung Cho, John Tyndall (1820-1894), who brought physics and the public together in Y. Park (Ed), *Teaching and Learning of Physics in Cultural Contexts: Proceedings of the International Conference on Physics Education*, World Scientific Publishing Co. 2004, 139-151.
[910] F. Galton, Composite portraits, *Journal of the Anthropological Institute* III, (1878), 285.
[911] 'In 1879 Galton gave a Friday evening lecture at the Royal Institution on composite portraiture. The lecture is called "Generic Images". *Proceedings of the Royal Institution*, IX, April 25, 1879, 161-70 quoted in K. Pearson, *The Life, Letters and Labours of Francis Galton*, 294-295.
[912] Francis Galton: RGS Committee Minute Books, Scientific Purposes and Geographical Prizes Committee minutes, February 8th 1884, 43.
[913] RGS Committee Minute Books, Education Committee minutes, November 14 1895, 288.
[914] B. Robertson, The South Kensington Museum in context: an alternative history, *Museum and Society* 2 (1), (March, 2004), 7.

exhibited Galton's composite portraits via the lantern in 1882,[916] some four years before the RGS employed the lantern.[917] This study shows that the SA seems to have first illustrated papers with a lantern in c. August 1878.[918]

In sketching the distributed geography of the lantern by key RGS figures this section gave a broad view of the geographical projections spaces and an array of lantern-slide lecture practices across diverse regional networks of knowledge making such as those of the BAAS, and London societies of science and popular culture such as the RAI, the RI and SA. This suggests that there was considerable porosity between the RGS and other societies in the final decades of the nineteenth-century, thereby developing Driver's thesis that the Society was a 'heterogenous' collective of individuals and interests.[919] Below I continue to extend the geographies of geography beyond the RGS.

Mackinder's Oxford University Extension Lectures

At the RGS, even after 1886 and despite the greater employment of the lantern by associates of the Society, demonstrated above, doubts prevailed

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[915] Abney was also associated with the Alpine Club. [Anonymous], Alpine Notes. The Picture Exhibition, *The Alpine Journal* XIII (94), (November, 1886), 176.

[916] 'CANTOR LECTURES. The first lecture of the course on "Recent Advances on Photography" was delivered by Captain. Abney R.E., F.R.S., on Monday 3oth […] Photographs were taken by means of the electric light, and illustrations of the processes were also thrown on the screen.' [Anonymous, 'Cantor Lectures', *The Journal of the Society of Arts* 30 (1524), February 3, 269] and 'CANTOR LECTURES. The forth and concluding lecture of Captain Abney's course on "Recent Advances in Photography" was delivered on Monday last […] The lecture concluded by the exhibition of some of Mr. Francis Galton's composite portraits upon the screen.' [Anonymous, Cantor Lectures, *The Journal of the Society of Arts* 30 (1527), (February 24), 369].

[917] RGS Committee Minute Books, *Hints to Travellers* Editorial sub-committee, November 19 1888, 25; Ryan, *Picturing Empire.*

[918] Chr. Schleswig-Holstein, Thomas Bolas, James Bichards, William White, D. Ainley, J. M. Sutton, John Makinson Fox, Edwin Chesshire, Henry Robinson, *The Journal of the Society of Arts* 26 (1341), (August 2, 1878), 818; Bolas, T. *The Journal of the Society for Arts* 26 (1342), (August 9, 1878) 832; 'Mr. Foxlee will now illustrate to you the method of making carbon pictures on ivory and on canvas […] Very beautiful transparency pictures can be produced by the carbon process […] I will exhibit them to you by means of the magic lantern.' Bolas, T. and Preece, W. H., *The Journal of the Society for Arts* 26 (1344), (August 23, 1878), 855.

[919] Stoddart, The RGS and the 'New Geography', 190-202; Ryan, *Photography, Geography and Empire, 1840-1914*; Driver, *Geography Militant,* 35.

over the authority of the lantern. Yet the medium would become critical in establishing the 'new' notionally modern discipline of geography. The Oxford University Extension lecture scheme for working class audiences, under the direction of Michael Sadler, had extended its syllabus so as to include geography in 1886.[920] In the same year Halford Mackinder was appointed to the OUE as 'lecturer in natural science and economic history' (Figure 23.).[921]

Figure 23. Photograph of Halford Mackinder (1861-1947), Maull & Fox. (RGS-IBG). Courtesy of the publisher.

The tradition of adult, life-long learning through lectures has an extensive history in Britain.[922] Alberti, Barnes and Welch have elucidated

[920] D. Phillips, Michael Sadler and Comparative Education, Oxford Review of Education 32 (1), The University and Public Education: The Contribution of Oxford (Feb., 2006), 39-54.
[921] G. Kearns, 'Halford John Mackinder 1861-1947', Geographers' *Biobibliographical Studies*, 9 (1985), 71 quoted in Ryan, *Photography, Geography and Empire, 1840-1914*, 235). Gilbert states that Mackinder was teaching on the OUE in 1885. He presented a map of 'Towns in which H.J. Mackinder gave courses of Oxford University Extension Lectures 1885 -1893' (Gilbert , Seven lamps of geography, 27).
[922] Inkster, The Public lecture as an instrument of science education for adults, 80-107; S. J. M. M. Alberti, Civic cultures and civic colleges in M. Daunton, *The Organisation of Knowledge in Victorian Britain*, 350-351; S. V. Barnes, England's civic universities and the triumph of the Oxbridge ideal, *History of Education Quarterly* 36, (1996), 271-305; E.

aspects of the scheme's origins in the Oxford and Cambridge ideals of a liberal education.[923] Despite this the teaching of geography has a place in this history that is barely discerned. It is therefore significant that by early November 1886 the RGS financed Mackinder's OUE lectures.[924] Mackinder lectured across England on the OUE scheme to adult audiences, to whom he preached ''the New Geography' with missionary zeal'.[925] In doing so he came to the attention of the RGS reformers. [926] From early February 1886, his OUE lectures were at times intended to be accompanied by projections from an 'oxy-hydrogen' lantern (Figure 24.).[927]

The absence of any mention in histories of geography of the Co-operative Movement's intimate connection to Mackinder's teaching on the OUE scheme is startling.[928] In recounting this phase of his life histories of geography have circled around Mackinder's involvement on the scheme, but these studies have traced the evolution of Mackinder's teaching and theory of geography as it developed the 'new' geography that would come to be seen as a science and focused on his activities once he was established as Reader in geography at Oxford.[929] Additionally, whilst the RGS extramural lectures feature in Bell's study of fin-de-siècle

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Welch, *The Peripatetic University: Cambridge Local lectures, 1873-1973*, Cambridge University Press, 1973.

[923] Alberti, Civic cultures and civic colleges, 350-351;

[924] RGS Committee Minute Book March 1883 - December 1890, Finance Committee Meeting November 1 1886, page 179: 'Cheque to Michael E. Sadler (Secretary Oxford University Extension, Council grant) 30.-.- […]'

[925] Gilbert, Seven lamps of geography, 27.

[926] E. W. Gilbert, *The Right Honourable Sir Halford J. Mackinder, P. C., 1861-1947*, *The GJ* 110 (1/3), (Jul. - Sep., 1947), 95. Mackinder ' […] gave 102 extension lectures in the year 1887-8 alone 8 and over 600 in his career. He travelled 30,000 miles in three years while engaged on this task. By these lectures he taught' several thousand pupils, many of them elementary teachers and students in training colleges.' (*Geographical Journal* 57, (1921), 28).

[927] Gilbert, Seven lamps of geography. 27; 'Oxford University Extension Lectures' Lincolnshire Chronicle, Tuesday 9th February 1886, page 2, British Library Newspaper archive http://www.britishnewspaperarchive.co.uk accessed 19/11/2015.

[928] Gilbert, 'Sir Halford Mackinder'; Parker, 'Mackinder'.

[929] Gilbert, Seven lamps of geography; Parker, Mackinder; Blouet, *Halford Mackinder a biography*.

internationalism and environmentalism as manifestations of geographical modernity, the earlier OUE extension lectures that are, as I show below, equally emblematic of such processes were omitted from her analysis.[930] Mackinder is absent in Rowbotham's extensive investigation of the OUE purposes for organizers, teachers and students alike.[931] She did, nevertheless, highlight the transcendental aspirations, albeit fluid ones, of all participants, students and teachers alike, for whom the scheme was variously perceived to overcome political, socio-economic and educational inequalities.[932] In assessing the collaboration between the OUE scheme and the Co-operative Society movement Goldman detailed the symbiosis and resistance between the two movements.[933] In practice there were, Goldman observed, and despite the OUE's high ideals, difficulties in attracting and retaining audiences to the lectures.[934] This was due to students' fatigue, lack of available finances and time, and the complexities of travel – students might be obliged to walk many miles after a day of labor in order to attend.[935] The most efficiently run courses were those scheduled by organizations such as the Co-operative Society that were already invested in by communities.[936] Local Co-operative societies, Goldman indicated, were 'less enthusiastic than expected' and Sadler and Mackinder, in recounting their involvement in the scheme, described 'an uphill fight to

[930] RGS, LBR MSS No. 4, Freeman MS in Bell, Reshaping boundaries, 155.
[931] S. Rowbotham, Travellers in a Strange Country: Responses of Working Class Students to the University Extension Movement - 1873-1910, *History Workshop* 12 (Autumn, 1981), 62-95.
[932] Rowbotham , Sheila Travellers in a Strange Country: Responses of Working Class Students to the University Extension Movement - 1873-1910, *History Workshop*, No. 12 (Autumn, 1981), pp. 62-95.
[933] Goldman, *Dons and Workers*, 38-44.
[934] Goldman, *Dons and Workers*, 43.
[935] Goldman, *Dons and Workers*, 81.
[936] Goldman, *Dons and Workers*, 80-81.

keep the courses going. In many the work fluctuated and then went out.'[937] Thus the citing by Goldman of a letter from one OUE student who expressly wished to attend Mackinder's lectures and asked leave to pay for the course once he had found employment is arresting. In the annual OUE report of 1887, Sadler reproduced a letter from an attendee of two previous courses and examinee in one of them:

> I came out of work the week Mr Shaw gave his last lecture: by careful management I was able to scrape together threepence per week for Mr Mallet's lectures. I have now no money, and my purpose in writing to you is to enquire if it is possible for you to let me have a ticket for Mr Mackinder's course, and I will pay you as soon as I succeed in obtaining work. I should very much like to attend this course, and writing to ask for a ticket is the only way of my being able to do so.[938]

Apparent in this quote is something of Mackinder's charisma and his course's appeal, but also the perception of the transcendental nature of learning and education in its provision of at the least mental stimulation, as well as the possibility of self-improvement and self-transformation, in accordance with Rowbotham's investigation.[939] Goldman referred to experiences of personal liberation and the 'existential break' from daily routine that learning afforded working men and women.[940] Whilst Bell underscored how 'Looking outwards to the globe was part of being modern, urban and cosmopolitan',[941] thereby underlining the importance of metropolitan centres, notably Edinburgh and Glasgow, in this process. Here the popularity of the OUE lectures suggests that this phenomenon was

[937] H.J. Mackinder and M. Sadler, University Extension Past, Present and Future, 3rd edn. (London, 1891), 30 in Goldman, *Dons and Workers*, 43.
[938] [OUE] Annual Report, 1886-7, 11 in Goldman, *Dons and Workers*, 81.
[939] Rowbotham,Travellers in a Strange Country, 65, 73 and 92.
[940] Goldman, *Dons and Workers*, 96.
[941] Bell, Reshaping boundaries,155.

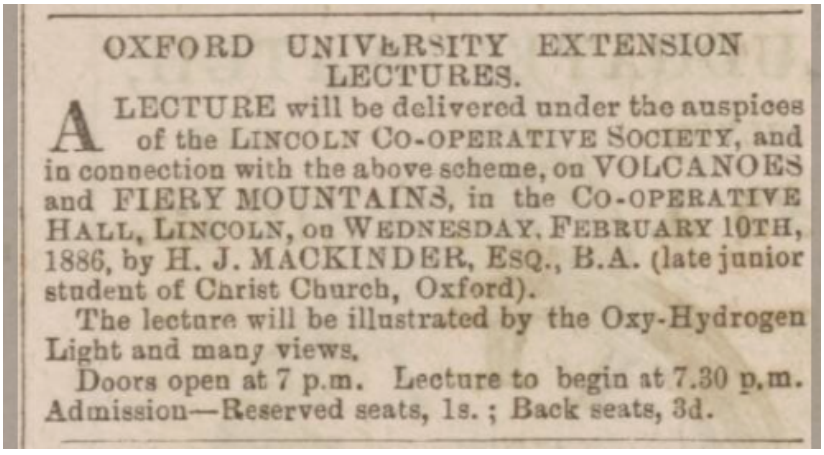
dispersed and widespread. The contouring of its smaller, regional geographies could prove insightful.[942]

The mobility required of the audiences and lecturers is of significance, especially since, Mackinder had recourse to the projection of lantern views.[943] This situates him in the vein of itinerant showmen of old who peddled their views, or visions, across Europe.[944] Additionally, the set nature of lectures may qualify these texts, and their performances, as 'travelling landscape objects'. [945] Mackinder and Sadler stressed the strenuous nature of the work that required long train journeys, weekly and fortnightly absences, and stays with those hosting the course. A general knowledge was important, rather than narrow expertise, and characters with a sense of empathy who could take 'an outside view of the subject' with the capacity of 'intellectual sympathy' with their audiences were vital skills.[946] Finally, Mackinder and Sadler perceived that OUE work required lecturers who were in a somewhat liminal position, 'men who belong neither exclusively to the academic nor the business worlds, but who can sympathize with the aims and interests of both.'[947] As such they too merit the epithet of 'go betweens' mediating between worlds.[948]

Underscored in Goldman's study was the fact that the 'new' geography of Mackinder was just one of several examples of intellectual

[942] Naylor, The Field, the museum and the lecture hall, 494-513; Naylor, *Regionalizing science.*
[943] Gilbert, Seven lamps of geography.
[944] Humphries and Lear, *Victorian Britain through the magic lantern*; della Dora, Putting the world into a box, 289; della Dora, Travelling landscape-objects; Rossell, Demolition d'un mur, 327.
[945] della Dora, Travelling landscape-objects.
[946] Mackinder and Sadler, University Extension Past, Present and Future, 103-6 in Goldman, *Dons and Workers*, 63.
[947] Mackinder and Sadler, University Extension Past, Present and Future, 103-6 in Goldman, *Dons and Workers*, 63.
[948] Schaffer, Roberts, Raj and Delbourgo (eds), *The Brokered World: Go- Betweens and Global Intelligence, 1770-1820.*

innovation that arose from the experiment of the OUE scheme. This brought together young academics and working-class communities around the UK, and thus occasioned glimpses of each others' lives and labours in the manner of the chiastic field-work described in Chapter 2.[949] The sources of Mackinder's vision of the 'new' geography, politics, and mutually-constituting educational and imperial ambitions of his later philosophy thus need to be situated within his early OUE teaching practices. Cosgrove signaled the potential connection between the two, notably in relation to Mackinder's teaching at the Rotherham Mechanic's Institute in 1885 where, Cosgrove suggested, Mackinder was 'framing the argument' he would put to the RGS in the 1887 'Scope and Methods' lecture.[950] So too does geography's modernization by reaching not solely beyond Britain toward an international, and predominantly imperial horizon, but here in looking inwards, nationally and at the reflection of each of these via the other. Moreover, the OUE scheme and the Co-operative Societies converged in their projections of internationalist ideals.



OXFORD UNIVERSITY EXTENSION LECTURES.

A LECTURE will be delivered under the auspices of the LINCOLN CO-OPERATIVE SOCIETY, and in connection with the above scheme, on VOLCANOES and FIERY MOUNTAINS, in the CO-OPERATIVE HALL, LINCOLN, on WEDNESDAY, FEBRUARY 10TH, 1886, by H. J. MACKINDER, ESQ., B.A. (late junior student of Christ Church, Oxford).

The lecture will be illustrated by the Oxy-Hydrogen Light and many views.

Doors open at 7 p.m. Lecture to begin at 7.30 p.m. Admission—Reserved seats, 1s.; Back seats, 3d.

Figure 24. 'Oxford University Extension Lectures' *Lincolnshire Chronicle*, Tuesday 9th February 1886.

[949] Goldman, *Dons and Workers*, 70-71.
[950] Cosgrove, *Geography and Vision,* 125.

It was 'under the auspices' of the Lincolnshire Co-operative Society, and in that Co-operative Society's Hall, in February 1886, that Mackinder lectured on 'Volcanoes and Fiery Mountains'.[951] From its foundation in 1844 the Co-operative Movement placed importance on the education of its members as well as the provision of employment and the cultivation of mutual-aid.[952] The extent to which the OUE and the Co-operative Society collaborated, and were symbiotic, in Lincoln, or elsewhere, is beyond the scope of this study. Yet it seems that the lantern, together with other opportunities for learning such as a circulating library, was a common feature of the Lincoln Co-operative Society's dedicated Educational Committee activities in the final decades of the nineteenth century.[953] Two further points are worth making here. Firstly, that the Lincoln Co-operative had close links with the city educational institutions and cathedral, notably over educational activities.[954] Secondly, that it was active in rural areas beyond the city where lantern-slide lectures were especially appreciated.[955]

The iconography to which the announcement for Mackinder's OUE lecture refers is certainly striking since it constitutes a further inverted perspective.[956] It does so in two ways. Armstrong has demonstrated how volcanoes constituted an archetype of longer histories of 'glassworlds' that comprise protean visions of the sublime.[957] Volcanoes were a common

[951] 'Oxford University Extension Lectures' Lincolnshire Chronicle, Tuesday 9th February 1886, page 2, British Library Newspaper archive, http://www.britishnewspaperarchive.co.uk accessed 19/11/2015.
[952] J. Birchall, *Co-op: The people's business.* Manchester University Press. 1994, 50-2 quoted in Eifler, Between attraction and instruction, 365.
[953] F. Bruckshaw and D. McNab, A Century of Achievement, The Story of Lincoln Co-operative Society, Lincoln Co-operative Society, Co-operative Press Limited, 1961, 98-103.
[954] Bruckshaw and McNab, *A Century of Achievement,* 99
[955] Bruckshaw and McNab, *A Century of Achievement,* 99 and 101
[956] della Dora, Inverting Perspective.
[957] Volcanic iconography was a trope of lantern-slide shows. From as early as 1767 in Sir William Hamilton's dissolving transparencies of erupting volcanoes were sent to the Royal Society. 1780 saw a performance of Dean's 15-minute Vesuvian eruption. The fascination with this phenomenon of nature, and its transformation into visual and textual metaphorical

graphic trope, but were also typical of popular, sensational lantern-slide shows, notably at the London Royal Polytechnic Institution, but also at other Co-operative Movement gatherings in this decade.[958] In this way Mackinder's deployment of such views identifies him as a later nineteenth-century example of the close relationship between the lantern technology and physical scientists, but also of romantic scientists, such as those alluded to by Kennedy.[959] Moreover, the advert for this particular OUE lecture, seems to highlight the projection of 'views,' rather than maps.[960] This is significant in showing that the importance of the lantern in geographical knowledge making practices and scales of knowing owed as much to the adaptation of visually- and verbally-communicated ideas for audiences of men and women in non-academic centres of learning around England who attended the OUE lectures, as it did to the RGS reformers and John Thomson. Moreover, the supremacy of cartographic images in the geographical imaginary is displaced. Photographs and other graphic images were, arguably, as significant.

As discussed in Chapter 2, this illustrates how welfare organisations such as the Co-operative Society harnessed knowledge, specifically geography, to attract audiences, and propagandize their own social concerns and ambitions. Lantern-slide lectures in this period were thus the

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expressions continued into the nineteenth century (Armstrong, *Glassworlds*, 312-315 and 276-280).

[958] R. Macfarlane, *Mountains of the Mind*, Granta Books, 2003, 77 and 150-151; Mannoni, Nekes, Warner, *Eyes, Lies & Illusions, The Art of Deception*, 20; Mannoni and Pesenti Campagnoni, *Lanterne Magique et Film Peint 400 Ans de Cinéma* 219; M. Loiperdinger, *The Social Impact of Screen Culture 1880-1914*, 2014, 12 in Vogl-Bienek and Crangle (Eds), *Screen Culture and the Social Questions 1880-1914*.

[959] Rossell, Demolition d'un mur, 322; M. F. Robinson, Science and exploration, in Kennedy (Ed), *Reinterpreting Exploration,* 27-29.

[960] 'Oxford University Extension Lectures' Lincolnshire Chronicle, Tuesday 9th February 1886, page 2, British Library Newspaper archive http://www.britishnewspaperarchive.co.uk accessed 19/11/2015.

'discursive space' of common concerns for social improvement.[961] Via the process of delivering the OUE lectures in this crucial phase, and arguably his employment of the lantern,Mackinder's undergraduate training in Natural Sciences and History fused into the vision of the 'new' geography that he presented to the RGS in January 1887. The methodological scope and conception of this 'new' geography, and its attempt to break with older methods of gazeteer text-book teaching, cannot be understood in isolation, however.[962] Instead they relate directly to the OUE audiences. It is notable that Mackinder employed the lantern in Lincolnshire, where he grew up, and where he may have had personal acquaintances, knowledge of audiences and their preferred learning methods.[963]

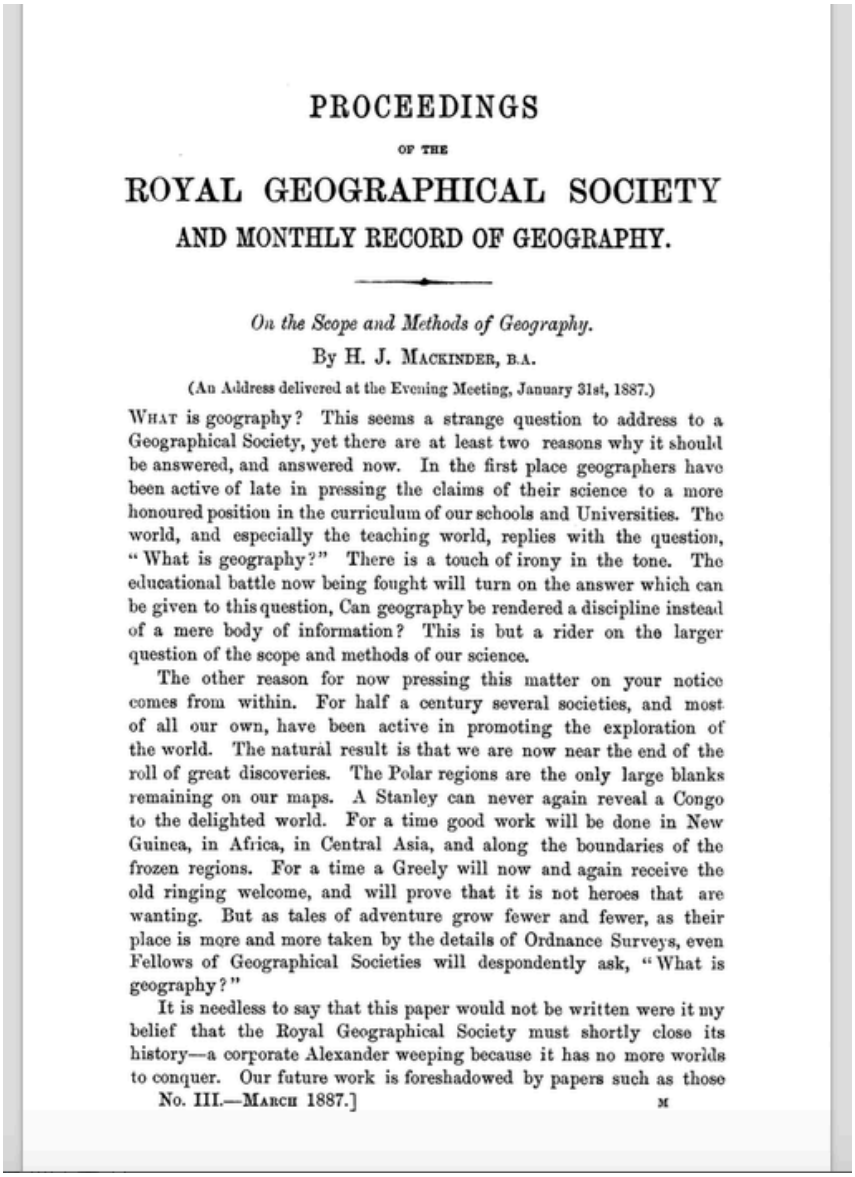
The historical geographies of 'Scope and Methods'

Mackinder's role in raising geography from 'the slough' into which it had fallen and in modern academic geography teaching in Britain has been widely investigated, notably in reference to the pivotal lecture 'On The Scope and Methods of Geography'.[964] Hudson described Mackinder as one of the 'fathers of modern geography' and his lecture has been understood to be of singular importance in the late nineteenth-century disciplinary history of British geography.[965] The lecture has been dissected and analyzed from a number of perspectives, in relation to what preceded it and what followed from it, and notably in its theoretical conception of what geography could

[961] Krauss, Photography's discursive spaces: landscape/view, 311-319; Edwards, Making histories, 67.
[962] Mayhew, Halford Mackinder's 'new' political geography and the geographical tradition, 771-791.
[963] Gilbert, The Right Honourable Sir Halford J. Mackinder, P. C., 1861-1947, 94.
[964] Gilbert, The Right Honourable Sir Halford J. Mackinder, P. C., 1861-1947, 93; Cosgrove, *Geography and Vision,* 125 and 133-34.
[965] Hudson, The new geography and the new imperialism, 1870-1918, *Antipode* 9 (2), (1972), 12-13; Stoddart, Geography and war, 87; Scargill, The RGS and the foundations of geography at Oxford.

be.[966] These approaches were largely concerned with the published textual version of the lecture's theoretical 'scope'. Given at the RGS on 31 January 1887, the lecture, has been described as 'the founding document of the 'New Geography' in England (Figure 25).[967] However, as I show below, it was not just a document or text that was read, but a multi-media lantern-slide lecture performance.

[966] Gilbert, Seven lamps of geography; R. Mayhew, Halford Mackinder's "new" political geography and the geographical tradition, Political Geography 19 (6), (August 2000), 771-791.
[967] Stoddart, Geography and war, 87.



PROCEEDINGS

OF THE

ROYAL GEOGRAPHICAL SOCIETY

AND MONTHLY RECORD OF GEOGRAPHY.

On the Scope and Methods of Geography.

By H. J. MACKINDER, B.A.

(An Address delivered at the Evening Meeting, January 31st, 1887.)

WHAT is geography? This seems a strange question to address to a Geographical Society, yet there are at least two reasons why it should be answered, and answered now. In the first place geographers have been active of late in pressing the claims of their science to a more honoured position in the curriculum of our schools and Universities. The world, and especially the teaching world, replies with the question, "What is geography?" There is a touch of irony in the tone. The educational battle now being fought will turn on the answer which can be given to this question, Can geography be rendered a discipline instead of a mere body of information? This is but a rider on the larger question of the scope and methods of our science.

The other reason for now pressing this matter on your notice comes from within. For half a century several societies, and most of all our own, have been active in promoting the exploration of the world. The natural result is that we are now near the end of the roll of great discoveries. The Polar regions are the only large blanks remaining on our maps. A Stanley can never again reveal a Congo to the delighted world. For a time good work will be done in New Guinea, in Africa, in Central Asia, and along the boundaries of the frozen regions. For a time a Greely will now and again receive the old ringing welcome, and will prove that it is not heroes that are wanting. But as tales of adventure grow fewer and fewer, as their place is more and more taken by the details of Ordnance Surveys, even Fellows of Geographical Societies will despondently ask, "What is geography?"

It is needless to say that this paper would not be written were it my belief that the Royal Geographical Society must shortly close its history—a corporate Alexander weeping because it has no more worlds to conquer. Our future work is foreshadowed by papers such as those

Figure 25. First page of Halford Mackinder's 'On the Scope and Method of Geography' lecture published in the *Proceedings of the Royal Geographical Society*, March 1887. (RGS-IBG) Used with permission of the publisher.

Coones claimed that Mackinder's paper had 'no illustrations.'[968] However a footnote at the back of Coones's publication did allude to the projection of 'slides'.[969] Thus existing studies have neglected the actual methods of 'Scope and Methods', and failed to identify the importance of

[968] P. Coones, *Mackinder's Scope and Methods of Geography After One Hundred Years,* The School of Geography, University of Oxford, 1987, 3.
[969] Coones, *Mackinder's Scope and Methods of Geography After One Hundred Years*, 57.

the lecture in providing a methodology for the teaching of geography, through the visual representation of the relationship between topographical form and distribution and related patterns of human settlement, and the projection of lantern-slides. The innovative visual 'method' of projecting maps has been overlooked and its importance in what is widely perceived by historians of geography as the founding lecture of the 'new', modern academic discipline of geography and subsequent evolution of disciplinary methods has, consequently, yet to be assessed. These novel insights into the lecture further support Scargill's argument that the event was 'stage-managed'.[970] Particularly as the projection of slides necessitated the hiring in advance of a lantern and lanternist as the RGS was not yet in possession of these.

Clements Markham's diary entries of November and December 1886 shore up the view that the event was staged so as to achieve a specific end. This is significant in their confirmation of Markham's endorsement of Mackinder and his evident support of geography education at Oxford. Markham recorded that the lecture '[…] is a brilliant production, most suggestive, and calculated to establish geography's place among the sciences. I read it with great interest.'[971] Speaking with Bates about Mackinder the next day, Bates relayed to Markham that Mackinder was '[…] so enthusiastic about geography that he is ready to devote his life to it. Evidently the man for an Oxford geographical professorship'.[972] At the end of November Markham wrote a favorable report of 'Scope and Methods'.[973] After Mackinder dined at Markham's house, Markham described Mackinder

[970] Scargill, The RGS and the foundations of geography at Oxford, 444.
[971] C. Markham, RGS **CRM/ 1/6 1885 – 1887 VI, page** 135.
[972] Markham, RGS **CRM/ 1/6 1885 – 1887 VI,** 135.page 136.
[973] Markham, RGS **CRM/ 1/6 1885 – 1887 VI,** 135.page 136.

as '[…] enthusiastic and very clever. A most agreeable companion.'[974] Then Markham noted that 'At the R.G.S. Council […] I read my Report on Mr Mackinder's paper, and Galton endorsed all I said, rather to my surprise.'[975] Finally, Mackinder was invited to attend yet another dinner at Markham's residence.[976] As well as pointing to possible tension between Galton and Markham, these diary extracts suggest that Markham may have been primed before 'Scope and Methods' was delivered. An alternative reading could be to see the comments as revelatory of Markham's having been 'in' on the 'stage-managed' lecture since he alluded to its being calculated.

The Journal Manuscript (JMS) of 'On the Scope and Methods of Geography' was received by the RGS on 22nd November 1886. By mid-December it had been decided to give Mackinder a platform. Attached to the manuscript there is now a note that reads:

> To be printed; copies to be sent to all person's whose opinions would have any weight or value, with a request that they will inform the Secretary whether they intend to join in its discussion; that it be read at one of our meetings; and that a special arrangement be made for giving ample time for its discussion. To be printed in the 'Proceedings' in full.[977]

Jones has alluded to delays in the production of maps by the RGS map draughtsman across the period 1881-1885.[978] In light of this a certain amount of speculation is, in my view, justifiable. It is questionable whether or not the RGS draughtsmen, Scharbau and Milne, could have produced any new diagrams for Mackinder's paper in the short time - six weeks - between the reception of the lecture manuscript, its approval for delivery

[974] Markham, RGS **CRM/ 1/6 1885 – 1887 VI,** 135, page 139.
[975] Markham, RGS **CRM/ 1/6 1885 – 1887 VI,** 135, page 141.
[976] Markham, RGS **CRM/ 1/6 1885 – 1887 VI,** 135, page 145.
[977] [Anonymous note attached to] Royal Geographical Society, JMS/21/52, H. J. Mackinder, On the Scope and Methods of Geography, 1886.
[978] Jones, Measuring the word, 326

and its delivery at the end of January.[979] The maps displayed in *Scope and Methods* were then, perhaps, already ready to exhibit. Or Mackinder may have brought his own cartographic lantern-slides with him, since as I have demonstrated above he already employed the medium in his lectures by February 1886, and thus may have structured the written 'Scope and Methods' paper around pre-existing images.

A hand-written note, attached to the JMS manuscript of 'Scope and Methods', states: 'It is intended that technical terms such as lithosphere, wrinkles, dip-slopes, Etc should be made clear by diagrams. H. J. Mackinder'.[980] Mackinder also alluded to his OUE lectures that were subsidized by the RGS:

> I am at present engaged in applying a practical test to my theory. I am delivering courses of Geographical Lectures on behalf of the Oxford University Extension. As these lectures have been subsidized by the Royal Geographical Society it may be of interest to append to this paper the syllabus. That syllabus will serve to indicate the topics spoken of, but being partly of the nature of an advertisement it must not be considered precise.[981]

Two significant lines of enquiry stem from this note. Firstly, whether Mackinder meant that he was testing the scope and methods of his vision of geography with the use of the lantern. Secondly, that he too can be considered a 'popularizer' in the need for an OUE pamphlet that was not 'precise' but instead ambiguously enticing to audiences. Finally, Mackinder's employment of the term 'diagram' may imply the use of lantern-slides.

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[979] RGS JMS/21/52, H. J. Mackinder, On the Scope and Methods of Geography, 1886.
[980] RGS JMS/21/52, H. J. Mackinder, On the Scope and Methods of Geography, 1886 quoted in P. Coones, 1987, 57.
[981] P.S. at the end of Mackinder's manuscript (RGS JMS/21/52, H. J. Mackinder, On the Scope and Methods of Geography, 1886, 79)

The post-lecture discussion, arguably as significant as the lecture, was postponed until mid-February, perhaps, strategically as dissent and adverse reactions had been anticipated, or to prolong the focus on the subject of the lecture and provide opportunities for lengthier comments. As previously stated, Scargill concluded that the lecture and the discussion were conceived and 'stage-managed' by Galton, Freshfield and others 'to bring to a head the RGS's desire to see geography established as a university subject in England' since the lecture laid out a vision of a new kind of geography teaching.[982] This lantern-slide lecture performance, and others, queries the understanding that '[…] an army of landscape-objects silently moves through the complex circuits of culture'.[983] Here, by contrast, lantern-slides were made to circulate by human vectors and in the socio-techno performances of lectures. Lantern-slides were thus part of polyphonic vocal performances across a range of 'discursive spaces'.[984]

When the lengthy paper and discussion were published together three months after the lecture in March 1887, there was no reference to the use of lime-light, dioptric light or lantern-slides.[985] The discussion transcript, it is worth bearing in mind, may have been edited by Bates (and possibly others), and only a partial representation of the events which took place. As with the aforementioned 'Melanesian Cruises' lecture, the lantern projections were only mentioned in a brief summary placed at the back of the *Proceedings*. [986] Appearing several months after the lecture's publication, this evidences the dissimulation of lantern use and still

[982] Scargill, The RGS and the foundations of geography at Oxford, 444.
[983] della Dora, Inverting perspective, 351.
[984] Krauss, Photography's discursive spaces: landscape/view, 311-319*;* Fish, *Is there a text in this class?*, 170 in Keighren *Reading the reception of Ellen Churchill Semple's Influences of geographic environment (1911),* 27-28.
[985] Mackinder, On the scope and methods of geography.
[986] 'Report of the Evening Meetings, Session, 1886-7. Fifth Meeting, January 31st, 1887', *Proceedings of the RGS,* New Monthly Series 9, (1887), 201-2.

contentious nature of the technology. Mackinder's paper, readers were told, was 'illustrated by diagrams and typical geographical views projected on a screen by means of the dioptric lantern and lime light.'[987] As with Cyprian Bridge's 1886 paper the word 'lantern' was prefaced by the adjective 'dioptric', a term which, perhaps, had more scientific connotations than 'magic'. The use of the lantern here would nevertheless have deeply transformative effects. The use of the 'dioptric lantern' was further qualified by the synecdoche of 'lime light'.

Having defined geography, Mackinder argued for the unity of 'physical' and 'political' geography. The former, Mackinder argued, was the underlying basis for understanding the latter. He offered the image of the bridge, now a disciplinary archetype, by explaining that [988]:

> One of the greatest of all gaps lies between the natural sciences and the study of humanity. It is the duty of the geographer to build one bridge over an abyss which in the opinion of many is upsetting the equilibrium of our culture.[989]

He then went on to describe the new inductive methods of reasoning by which the subject might be taught, first, in verbal images and by appealing to the audience's imagination via the creation of pictures in the mind's eye as an alternative to the traditional text book teaching method of lists of disembodied facts and figures. Finally, Mackinder passed to 'the special illustration' which had 'been promised'.[990] The projected 'diagrams and typical geographical views' may have included maps of England and London. In addition, maps of the Indian sub-continent may have been

[987] Report of the Evening Meetings, Session 1886-7. Fifth Meeting, January 31st, 1887. *Proceedings of the RGS,* New Monthly Series 9, (1987), 201-2.
[988] Cosgrove, *Geography and Vision,* 125.
[989] Mackinder, On the scope and methods of geography, 148.
[990] H. J. Mackinder, 'Scope and Methods of Geography', *Proceedings of the RGS,* New Monthly Series 9 (1887), 158.

shown. Rev. Canon Daniel (Principal Battersea Training College) stated that 'There were three maps of Hindostan exhibited. One gave the population, another the rainfall, and the third the mountain and river system.'[991] Mackinder used these to analyze the distribution and causal relationships between rainfall, topography and population distribution. Canon Daniel also discussed a map of southern England.[992]

Unlike in the 'Melanesian Cruises' lecture, the lantern-slides were projected *during* the lecture, rather than after it, in 'synchronized' fashion.[993] The lecture was interactive between the lecturer and the lanternist as the views and maps structured and evidenced Mackinder's arguments, rather than just providing entertaining illustration after the spoken paper. This form of synchronization was significant in its alignment of the RGS with wider lecture entertainment practices that have been identified as marking a scalar shift associated with late nineteenth-century modernity.[994]

Within the geographical projections space of the lecture, synchronization is taken as the tandem of lecturer's spoken delivery with the projection of specific images. Nelson was amongst those to allude to rhetoric's function in art history lantern-slide lectures. Ryan too has stated that the 'currency of slides' necessitates an analysis of their rhetorical utility.'[995] A lecturer, by adopting lantern-slides, 'gains legitimacy through the cogency of her arguments, the acquiescence of the audience, and the performative frame that enables her to mold the audience's vision.'[996] Lately Ryan revisited the RGS photographic practices to add definition to the

[991] Mackinder, Scope and methods of geography, 167.
[992] Mackinder, Scope and methods of geography, 148.
[993] R. Dixon, *Photography, Early Cinema, And Colonial Modernity: Frank Hurley's Synchronized Lecture Entertainments*, Anthem Press, 2012.
[994] Dixon, *Photography, early cinema, and colonial modernity.*
[995] Ryan, Who's afraid of visual culture?, 234.
[996] Nelson, 415-418 in Ryan, Who's afraid of visual culture?, 234.

practice of photography in the field and in RGS lectures. His conclusion that the impact of photography was 'revolutionary,' requires precision, particularly in terms of the mutual-influence between images and words, that is to say the 'chiastic', or relative interaction of images and spoken text, and indeed between individual and collective understandings of these, discussed below.[997]

The published reactions from the audience can broadly be grouped into those from RGS Council members who supported geography education and those of non-Council members. The responses from the Council members reflect a clear vision of what an academic geography could be, its place within wider sciences and methods for teaching it, whilst those of non-Council members betrayed a lack of grasp on a structured understanding of the subject, an uncertainty of the subject's location within a nebulous canon of knowledge and some dissent about the best methods of practice. The inclusion of both views and maps in the lecture, the collaborative efforts of the staff, the commercial firm of Newton & Co. who projected the lantern-slides demonstrate the chiastic nature of the performance.[998]

The lecture's novelty and significance resided less in Mackinder's attempts to define geography, than in the visual methods employed to do so. Freshfield perceived this.[999] An inverted perspective is pertinent here since when analyzing the paper today it ishard to see the science in it. Comments that followed the lecture also suggest this. The post-lecture discussion included one brief allusion to the fact that the lecture was

[997] Ryan, Photography, visual revolutions and Victorian geography, 229.
[998] RGS Committee Minute Book March 1883 - December 1890, Finance Committee Meeting, March 7 1887, 198.
[999] Mackinder, Scope and methods of geography, 172.

'graphically' described.[1000] But Canon Daniel concurred that the maps exhibited accounted for the close inter-dependence between the distribution of 'man' within the specific environmental conditions.[1001] The paper received further responses from the audience which were both favorable and critically reflective of, what were then innovative, methods employed by Mackinder.

Mr. J. Bryce appreciated both Mackinder's argument and his exposition of 'happy illustrations' demonstrating how 'his conception of geography was capable of being worked out and applied to different minor departments of geographical investigation.'[1002] Galton drew attention to the conceptual and spatial semantics of knowledge-making and made clear his belief that geography, whether in teaching or in textual or visual form, was an 'art'. Whilst he praised Mackinder's attempts to 'frame a definition' of geography, he thought 'an even simpler definition was possible, namely, that the art of geography was to give a vivid and connected account of the more interesting characteristics of specified districts.'[1003] Galton stated that this ability was rare as even amongst 'eminent travellers' powers of expression were so lacking that they could only provide 'a very slight idea of the country they had visited'.[1004] Deficiencies of language, he argued, were at fault in their inability to express visual objects. Referring, perhaps, to his own photographic experiments with facial features and racial characteristics Galton likened countries to faces and asked 'Who could describe a face in that room in such a way that another person who had never seen it before,

[1000] E. Delmar Morgan, Prejevalsky's Journeys and Discoveries in Central Asia, *Proceedings of the RGS*, New Monthly Series 9 (4), (Apr., 1887), 230.
[1001] Mackinder, Scope and methods of geography, 167.
[1002] Mackinder, Scope and methods of geography, 170.
[1003] Mackinder, Scope and methods of geography, 165.
[1004] Mackinder, Scope and methods of geography, 165.

should recognize it when seen?' Teaching too was likened to an art and the geography teacher's role involved the mobilization of ideas and the mind of the student 'to bring vividly before the mind of the learner what he wished to convey, so as to put the learner as far as possible in the position of one who had actually been to the country.'[1005] Exposure to illustrations and photographs, it was implied, could develop this ability.

Here geography was conceived as an art of verbal expression, visualization and of imagination. As such this situates the historical vision of the discipline in relation to Lévi-Strauss's understanding of the chiastic process of knowledge making and wider histories of virtual travel.[1006] Such comments put one in mind of Stoddart's argument that Mackinder's contribution to geography was not so much in the 'intellectual development of the subject or in the extension of knowledge'. [1007] Perhaps then Mackinder's most significant legacy to the making and mobilizing of an idea of geography lies in his visual methods of teaching with lantern-slides and practice of visualization. This is demonstrated by the belief of audiences in the value of geography through the harnessing of the fetish-like device of belief, the lantern.

When 'Scope and Methods' was delivered the disciplinary boundaries of geography were very much un-established. The post-lecture discussion shows that geography was at this time acknowledged by some to be a relational subject with a plurality of definitions of the discipline admitted, even if only strategically to keep the peace between the internal factions within the RGS. Galton argued that 'geography' was 'used in different senses, so they ought to be grateful to Mr. Mackinder for the effort

[1005] Mackinder, Scope and methods of geography, 165.
[1006] E. Huhtamo, *Illusions in Motion*, 2013.
[1007] Stoddart, The RGS and the 'New Geography',199.

he had made to frame a definition that should combine the suffrages of most people.'[1008] Thus the 'Scope and methods' lantern-slide lecture can thus be conceived and interpreted as a geography of definitions of geography.

Within the context of the proliferation and specialization of physical and human sciences in Britain, the aim of Mackinder's 'new' geography was to draw together and describe the relationships between, if not reconcile, different perspectives. This paralleled the ambitions of the reformers within the Society who, at this time, sought to widen and diversify the definitions, practices and purposes of geography. A sense of relativity is therefore discerned at this instance of the nascent modern discipline's history. Freshfield hoped that 'brilliant papers of adventure, discovery, and research would be obtained by the Society for its journal and its meetings, so that every taste might be satisfied.'[1009] Strachey concluded that geography 'like all mixed sciences, might be viewed in ten thousand ways, but all those ways were useful and valuable.'[1010] Lantern-slides in their material and iconic forms reflect this era of nascent academic geography and the fusion of a unified physical and human perspective. We can thus see the creation at the RGS of a collection of lantern-slide images and a body of geographers and the mutual constitution of both.

Amongst the themes generated by ' Scope and Methods' was the role of visual and verbal imagery in teaching and in shaping the subject. The place, and relationship of geography to wider sciences of geology, natural science and history, and the internal structure of geography and relationship between physical and political geography were also offered up

[1008] Mackinder, Scope and methods of geography, 165.
[1009] Mackinder, Scope and methods of geography, 173.
[1010] Mackinder, Scope and methods of geography, 174.

for collective debate. Bryce addressed the charge that 'geographers are merely dabblers in all the sciences' by affirming that geography 'has bearings on many subjects, but it does not bodily include all these subjects'.[1011] 'The truth of the matter', he pronounced was that 'the bounds of all the sciences must naturally be compromises. Knowledge, as we have said before, is one. Its division into subjects is a concession to human weakness.'[1012] The chiastic, mutual relativity of matter is visible here.

Ever forthright, Freshfield was most critical of travellers' narratives. He argued that training in practices of perception and of what to observe was the foundation of geography. Dismissing claims that the age of discovery was over, Freshfield asserted that 'The world was not yet used up' since he considered that no 'region had been explored until it had been described by a person of some perception'. [1013] Referencing Galton's comments, Freshfield, suggested that:

> It was perhaps not so much the words as the power of observation that was wanting. The number of good narratives of travel was comparatively small, because the perception of English travellers was so often limited and untrained.[1014]

Pursuing the thought, he provocatively asked the Fellows 'how many countries they had heard described which they did not wish to hear described again by somebody with vivid perceptions.'[1015] Photographs, as a record of phenomena observed or as a method of demonstration could overcome this deficiency. Mackinder argued the case for unity between the physical and political, that we would understand today as aspects of human geography and for the place of space in science. The images used in

[1011] Mackinder, Scope and methods of geography, 154.
[1012] Mackinder, Scope and methods of geography, 154.
[1013] Mackinder, Scope and methods of geography, 173.
[1014] Mackinder, Scope and methods of geography, 173.
[1015] Mackinder, Scope and methods of geography, 173.

lantern-slide form at this time evidence this transitional phase in the journey of geography.

Mackinder's 1887 lecture, in both the methodological use of lantern-slide images and the proposed vision of a unified physical and human geography, shaped the forms and subjects represented in the RGS lantern-slide collections.

The particular visual language, material and spatial possibilities of photos and other images such as maps and drawings remediated as lantern-slides bridged the gap and brought together humanities subjects with those of the natural sciences. Geography then emerged as an inter-disciplinary subject within the commons of science and as a practice that, as I explained in Chapter 2, offered the possibility of retaining some of the 'numinous' that many considered to be threatened by scientific practice.[1016] Debates about the definition of geography and geographical culture thus mirrored broader debates about 'culture' regarding 'the purposes of literary or humane knowledge and the objectives of education'.[1017] Finally, the role of the geographical projections space as a virtual bridge, a hybrid space, via which other places were brought to RGS audiences and audiences were transported to other places within the space of the lecture is also apparent. Thus the 'new geography' emerged from the bridging of the gap and reconciliation of known physical geographies with political, or human, ones. Lantern-slides as images and material objects produced by geographical activities emerge from this space. If the 'new' geography was a transitional subject, with an inherent mobility at its core, then the use of lantern-slides

[1016] Zajonc, *Catching The Light The Entwined History of Light and Mind*, 158-9; Burton (translated by) *The Kasîdah of Haji Abou El-Yezdi*, 25.
[1017] O'Gorman, Introduction, in F. O'Gorman (Ed), The Cambridge Companion to Victorian Culture, 5-6

can be seen as typical of a transitional phase within, first, the RGS and, secondly, in geography as the peoples and practices of both expanded and diversified.

The popularization of geography was more accurately, diversification and adaptation; the process involved the expansion of access to geographical knowledge and dissemination of that knowledge via visual materials such as lantern-slides and via the lectures these illustrated. In addition the expansion of the geographies of geography involved not just the incorporation of texts and images representing the human subject across a spectrum of different scales of nation, race, culture, divided and simultaneously unified under the common identity of the human species. How 'the distribution not only of the races, but also of numerous attributes of man, languages, religions, political organisations and forms of civilization' [1018] was also the concern of this geography. Sir Frederic Goldsmid (1818-1908), a retired solder who had served in Persia and India and writer, asserted that the relevance of geography to the understanding of human behavior would excite the most interest and that 'nine out of ten students who approach geography will necessarily approach it from the human standpoint. They wish to study the world as man's environment.'[1019] The RGS lantern-slide collections bear witness to this. Speaking as if the discipline of geography were a country in need of bodies to maintain it, Goldsmid advocated that to 'popularise' geography:

> the method of study must be such as to suit the mental bias of the pupil. Call the principle advocated "a concession to human weakness" if you will; but so long as human nature is weak, the fact must be

[1018] Mackinder, Scope and methods of geography, 162.
[1019] G. S. Woods, *rev* A. May, ODNB for entry on Sir Frederic John Goldsmid: http://www.oxforddnb.com.lib.exeter.ac.uk/view/article/33443?docPos=5 (accessed 08.02.2016) Mackinder, Scope and methods of geography, 162.

> acknowledged, and treatment regulated accordingly.'[1020]

Goldsmid's comment may be taken as an attempt to explain the perception, in the minds of some, of lantern-slides association with juvenile and facile qualities. The lecture and the use of lantern-slide illustrations in it provoked debate about the educational value of geography as mental exercise. If geography were the common meeting ground between sciences, it was argued, then it could have the positive effect of creating wholeness in a boy's mind. For Markham 'A true geographer, taking up the central position…His work is to bring out the relations of special subjects. The more scientific investigation tends to specialism, the more necessity is therefore students whose aim it shall be to bring out the relations of the special subjects.'[1021] For Mackinder, Markham, Freshfield, Galton and Strachey, as supporters of geography education, the point of the subject was to explain causality and relativity. By passing from one cause to another and in the reconciliation of the physical and the human, the supporters upheld the view that the practice of geography therefore comprised mental mobility and exercise. However, Mackinder did not balk at criticizing the RGS and its audiences. Thus lantern-slides can be seen as having shaped the methods, the scientific content and the purpose, or practical utility, of the 'new geography'.

The lecture, or perhaps the lantern-slides which illustrated it, were not, however, received positively by all members of the audience. McClintock, an Admiral and RGS Council member whom Mackinder 'fondly' remembered in later life, sat in the front row of the theatre muttering

[1020] Mackinder, Scope and methods of geography, 164.
[1021] Mackinder, Scope and methods of geography, 172.

'damned cheek' throughout the lecture.[1022] Whether this was because of Mackinder's challenging of traditional presentational forms of geography, use of the lantern or the necessary darkness required for optimal lantern-slide viewing, or a conjunction of all three, is unclear. However, the recorded dissent to Mackinder's lecture suggests once again that the veracity and forms of lantern-slides were by no means self-evident, as Nelson argued.[1023]

As well as the novelty of lantern-slide projections, Mackinder's teaching methods were physically impressive performances. Audiences were attracted as much by the delivery and the content of his lectures as by his personal charisma. This is in line with Secord, Alberti, Morus and Hewitt's observations of other successful late nineteenth-century public performers of knowledge.[1024] Mackinder embodied landscapes and the processes that shaped them with his whole person and physically described them with his hands.[1025] Recalling his early lectures at Oxford, Mackinder drew attention to his use of maps and how he used to 'lecture on them [the maps] […] quite as much with my hands (plastically) as my voice. Say Wales 'a sweep of the flat hand to generalize the highland, and a run of the finger along the edge descending to the English Plain.'[1026] Less than a decade after delivering his foundational lecture, Mackinder described his

[1022] Gilbert, The Right Honourable Sir Halford J. Mackinder, P. C., 1861-1947, 94-99.
[1023] Nelson, The slide lecture, 433.
[1024] J. Secord, *Victorian Sensation: The Extraordinary Publication, Reception and Secret Authorship of Vestiges of Vestiges of the Natural History of Creation,* 2000, 410-16; J. Secord, How scientific conversation became shop talk in Fyfe and Lightman (Eds), *Science in The Marketplace Nineteenth-Century Sites And Experiences*, 2007, 30; Alberti, Conversaziones and the experience of Science in Victorian England, *Journal of Victorian Culture* 8 (2), (2003), 218; Morus, 'More The Aspect of Magic than Anything Natural': The Philosophy of Demonstration in (Eds) Fyfe and Lightman, *Science in The Marketplace: Nineteenth- Century Sites And Experiences*, 337; M. Hewitt, *Beyond Scientific Spectacle: Image and Word In Nineteenth-Century Popular Lecturing*, 86-88 in Kember, Plunkett and Sullivan (Eds), *Popular exhibitions, Science and Showmanship, 1840-1910*.
[1025] Geographical Notes, *Proceedings of the RGS* 9 (7), (Jul., 1887), 437.
[1026] Gilbert, The Right Honourable Sir Halford J. Mackinder, P. C., 1861-1947, 98.

vision of an ideal geographer as male and as 'a Cartographer he would produce scholarly and graphic maps' and 'as a teacher he would make maps speak.' [1027] For Gilbert, that was precisely Mackinder's ability; Mackinder's audiences were receptive to his ability to translate the strength of his imagination into emotion and embodied performances.[1028] Such a view of knowledge making as embodied performance in which the lecturer was, as much as the images projected, a feature of the exhibition has latterly been recognized by historians, amongst them Hewitt, as a significant factor in understanding the effects of the lantern within specific lecture contexts.[1029] However, it is also apposite to frame Mackinder's perceived ability in terms of della Dora's 'numinous materialites'. [1030] This then constitutes a scientific example of the projection of abilities on to inanimate material objects or, perhaps, latter day animism of a fetishistic kind.[1031] This inverted perspective sees the embodiment of landscape by the lecturer as a form of possession by the very subject matter he or she seeks to convey. The lecturer thereby becomes an alternative species of 'travelling landscape-object'.[1032]

As stated at the beginning of the chapter, Mackinder, even as a practicing scientist, can be understood as a latter day romantic.[1033] For Heffernan Mackinder was ' […] driven by an almost mystical primitivism which led him to champion an educational system based on visual skills

[1027] Scottish Geographical Magazine,11, 1895, 508 in Gilbert, Seven lamps of geography, 34.
[1028] Gilbert Seven lamps of geography, 21-43.
[1029] M. Hewitt, *Beyond Scientific Spectacle: Image and Word In Nineteenth-Century Popular Lecturing*, 86-88 in Kember, Plunkett and Sullivan (Eds), *Popular exhibitions, Science and Showmanship, 1840-1910*.
[1030] della Dora, Inverting Perspective, 335.
[1031] Latour, *Pandora's Hope, Essays on The Reality of Science Studies*, 266-292; Latour, *The Modern Cult Of The Factish Gods,* 7-34.
[1032] della Dora, Travelling landscape-objects, 334-351.
[1033] D. Kennedy (Ed), *Reinterpreting Exploration*, 27-32.

[hence the role for geography as observation and visualization] […]'.[1034] Throughout his career Mackinder deployed these communication skills in his twin-ambitions of imperial and educational reform. Mackinder, O Tuathail argued, was 'a British imperialist intellectual who championed social imperialism and fostered a romantic mythology as a means of dealing with uncomfortable change - particularly the rise of working-class socialism.' [1035] In consequence, the roots of Mackinder's vision of geography, his political and social outlook need to be situated in relation to his early teaching methods and experiences on the OUE lecture circuit as I have outlined them above.[1036] These might be further traced to his Oxford undergraduate days where he came under the influence of naturalist Henry Nottinge Moseley.[1037] The influence of the teaching and thoughts of John Ruskin, who was lecturing at Oxford in the early 1880s, on Mackinder's visual imagination and vision of a human and physical geography needs further assessment since, like Mackinder, Ruskin was affiliated to Christ Church College and the two men were active within the Oxford Museum.[1038] Here I concur with O Tuathail in thinking that in Mackinder's overall corpus, and already in his early 'Scope and Methods' lecture, what we see is not a vision of a 'new' modern academic discipline of geography, but instead a romantic recasting of '[…] classical and pre-industrial humanistic visions', but not with his rejection of 'modernist visions of material progress, equality

[1034] M. Heffernan, Balancing visions: comments on G. O'Tuathail's critical geopolitics, *Political Geography* 19, (2000), 348.
[1035] G. O Tuathail, Putting Mackinder in his place, *Political Geography* II (1), (Jan. 1992), 102.
[1036] Cosgrove, *Geography and Vision,* 125.
[1037] Blouet, *Halford Mackinder*, 23.
[1038] O Tuathail, Putting Mackinder in his place, 110; D. Cosgrove, *Geography and Vision: Seeing, Imagining And Representing The World,* I.B. Tauris, 2012, 124.

and emancipation' by Mackinder.[1039] Human engagements with the lantern were as much a feature of pre-industrial, as later nineteenth-century 'modernity'. Moreover, Mackinder's OUE involvement and the OUE scheme's connections to the Co-operative Society undermine O Tuathail's argument; emancipation, equality and material progress were imbricated in the Co-operative Society and OUE lecture scheme's objectives. O Tuathail also stressed that Mackinder's geography was patriarchal rather than democratic.[1040] However, in elucidating his vision of geography and in the visual methods of lantern-slide projections employed to do so in 'Scope and Methods' Mackinder leveled the field and set science beside art, words next to images, and statesmen shoulder to shoulder with teachers.[1041] As such O Tuathail concluded that Romanticism was the foundation of Mackinder's ideology and vision for a discipline that would provide the antidote to industrialization and urbanization that Mackinder certainly witnessed on his travels around the country on the OUE circuit.[1042] This ambition could be achieved notably through education, and holistic and visual methods of teaching.[1043] O Tuathail asserted that Mackinder's 'new' geography was thus 'an aesthetic vision'.[1044] However, this vision was not Mackinder's alone. As I demonstrated above, it was shared, at least in part, by Galton and Freshfield.

The outcome of the 'Scope and Methods' lecture is well known. Following it the first Readership in geography was established at Oxford.

[1039] A. Mayer, *The Persistence of The Old Regime*, Pantheon, 1981 referenced in O Tuathail, Putting Mackinder in his place, 110.
[1040] O Tuathail, Putting Mackinder in his place, 115.
[1041] O Tuathail, *Putting Mackinder in his place*, 114.
[1042] O Tuathail, *Putting Mackinder in his place*, 115.
[1043] O Tuathail, *Putting Mackinder in his place*, 115.
[1044] O Tuathail, *Putting Mackinder in his place*, 115.

Mackinder was appointed to this position.[1045] In the instance of the 'Scope and Methods' lantern-slide lecture the lantern-slides confirm the assertion that landscape-objects can serve 'as primary currencies for the circulation of place through space and time.'[1046] The lecture thus exemplifies how disciplines were, at times, defined by their visible scope, and how ideas were transported via 'transport phenomena'.[1047] Here this view is upheld and extended. Lantern-slides, as projected images, did, at times, engender space. In this case, a space for geography within the University curriculum. The lantern was also a vector of both information and transformation in the Latourian sense.[1048] The lantern and the socio-techno configuration staged by the RGS were the 'transport phenomena' that returned geography to the University itself.[1049] Beyond the Society the lantern continued to be an important factor in establishing the authority of geographical science. This again affirms my argument that there was no singularity in the establishment of geography as a science. Instead, as I show below, there was wave upon wave of instances in which lantern-slides continued to be a significant factor in the drawn out process of establishing a discipline of geography in academic settings and in establishing its scientific authority.

After 'Scope and Methods,' and writing in the journal *Science* on 'The Geographical Movement in England' in August 1887, Keltie assessed the new teaching aids for demonstrating and illustrating geographical 'facts', which were appearing in the UK. Materials such as plastic, he suggested, might be used to show the crumpling of the earth's crust and sand and

[1045] Gilbert, Seven lamps of geography; Stoddart, The RGS and the 'new geography'.
[1046] della Dora, Travelling landscape-objects, 335.
[1047] Schaffer, Transport phenomena, 71.
[1048] Latour, How to be iconophilic in art, science and religion in Jones and Galison (Eds), *Picturing Science Producing Art*, 424-440; B. Latour, *On the Modern Cult of The Factish Gods*, Duke University Press, 2010, 102.
[1049] Schaffer, *Transport phenomena,* 71-91.

clay.[1050] German pictures, or oleographs, that depicted 'the characteristic features of the various regions of the globe, and the typical forms assumed by the leading classes of phenomena with which geography deals.' were also of use. [1051] Thus the need for good large-scale photographs was emphasised. Also highlighted was the potential of the 'magic lantern,' rather than dioptric lantern or lime-light, to 'be used with great effect to produce large-scale maps on the screen, to exhibit special features, and to bring pictures of typical landscapes before the eyes of the pupils.'[1052]

In a report of his first year in the Readership of Geography at Oxford, Mackinder stated that he had never been without an audience and that this was frequently composed of both men and women. Describing the venue and the facilities provided by the University, he underscored the total lack of 'the necessary means of illustration' bar 'a black-board, and a few borrowed maps kindly lent me from the Society's Educational Collection.' However, it is clear that by showing that his lectures were well attended, he hoped to justify a request for additional funds and illustrative materials. He concluded the report with details of numbers and locations of the Oxford University Extension lectures, which he continued to deliver in addition to the Readership. Bates, the RGS Assistant Secretary examined Mackinder's students on these courses. Mackinder went on to explain that 'For the purpose of illustrating these lectures, we have had constructed, with part of the Society's grant, about 150 lantern-slides, maps, diagrams, and typical views.'[1053] Thus the Society, its staff and possibly Thomson as Instructor in

[1050] J. S. Keltie, The Geographical Movement in England, *Science* 10 (237), (Aug. 19, 1887), 91.
[1051] Keltie, The Geographical Movement in England, 91.
[1052] Keltie, The Geographical Movement in England, 91.
[1053] H. J. MacKinder , Geographical education: the year's progress at Oxford, *Proceedings of the RGS*, New Monthly Series 10 (8), (Aug., 1888), 533.

photography, were occupied with producing lantern-slides for the Oxford course. Mackinder's apparently different visual materials of teaching Oxford undergraduates and students of the University Extension courses is notable. Owing perhaps to the popularity of his course at which fifty members of the University regularly attended and further 'occasional students' supplemented numbers, the University subsequently granted £100 from the Common University fund 'for the purchase of diagrams and materials necessary for the illustration of his lectures.'[1054]

Conclusion

This chapter has examined how the lantern was integral to the process of epistemic disciplinization.[1055] I have wanted to set existing histories of Mackinder and 'The Scope and Methods' lecture within a wider scheme by, firstly, contextualizing the RGS in relation to the lantern practices of the BAAS and other London savant societies. In doing so I have shown that geography's explicit academic reincarnation was secured by a methodological process of visual and verbal knowledge display and dissemination in a lantern-slide lecture. John Thomson was therefore not the sole force behind the RGS's engagement with the lantern. Nor was geography's professionalization, academic institutionalization and popularization embodied in the lone male apostle of Mackinder, who set out from Oxford, travelled to the RGS, and then returned to Oxford with a license to establish the discipline.[1056] Instead the methodological foundation of the 'new' geography developed via communication in working class

[1054] 'Geographical Notes, Geography at Oxford', *Proceedings of the RGS*, New Monthly Series 11 (12), (Dec., 1889), 737-38.
[1055] Withers, *Geography and science in Britain, 1831-1939*, 3.
[1056] Stoddart , The RGS and the 'New Geography'; G. Kearns, The political pivot of geography, *The GJ* 170 (4), 337–346; Livingstone, *The Geographical Tradition*.

societies and clubs and the public and communal culture of knowledge in lectures beyond academia in the second half of the nineteenth century. Geography's professionalization consisted of multiple, intersecting, moments by human, conceptual and material – often visual – media such as lantern-slides in the manner of 'travelling landscape-objects'.[1057] In setting the RGS and 'Scope and Methods' within this wider frame the chiastic process out of which geography re-emerged between the University of Oxford, a demand for the subject from OUE audiences and the RGS is also discernable. These can be traced across a rapidly changing British culture, and via a range of individual human and non-human 'transformers,' in particular via the technology of the lantern, through which the proto-disciplinary ways of seeing were transmitted, in relay-like fashion across space and time.[1058]

[1057] della Dora, Travelling landscape-objects, 334-354.
[1058] della Dora, Travelling landscape-objects, 340.

CHAPTER 7. THE ART OF GEOGRAPHICAL SCIENCE C. 1888-1894

Introduction

If, as seen in the previous chapter, the Oxford authorities were convinced of the utility of lantern, then some at the RGS were not. The lack of explicit reference to the medium in either the published account of the 'Scope and Methods' lecture or discussion is indicative of persisting doubts about the medium's utility and the authority of images in RGS lectures.[1059] With this in mind, I continue to assess the RGS's early lantern use in lectures. I follow the trail of the lantern-slide 'travelling landscape-objects' through the geographical projections spaces to bring to light the medium's effects as they were perceived by RGS audiences, and as lantern-slide projections featured more frequently within the Society's Evening Meeting lectures.[1060]

Numerous histories of exploration and geographical knowledge-making have been fashioned around the notion of correct observation and conduct in the field. Ranking among these studies are those that privilege texts such as *Hints to Traveller*'s.[1061] Studies of instruments also circle around this theme.[1062] Driver remarked that 'The proper conduct of observation – in sketching or in collecting, for example – required training not only of the eyes, but also of the hands, the feet, and indeed of the whole body of the observer.'[1063] Foregrounded in many studies are matters of 'correct comportment, a disciplining of the senses.'[1064] Withers drew from Cope in highlighting the contested genealogies of geographical methods,

[1059] The discussion was published three months after the lecture in March 1887.
[1060] della Dora, Travelling landscape-objects, 334-354.
[1061] Driver, *Geography Militant*; Driver, Distance and disturbance: travel, exploration and knowledge in the nineteenth century, 73-92; Withers, Science, scientific instruments and questions of method in nineteenth-century British geography, 167-179.
[1062] Withers, Science, scientific instruments and questions of method in nineteenth-century British geography, 167-179.
[1063] Driver, Distance and disturbance, 86.
[1064] Driver, Distance and disturbance, 86.

and in accentuating the historical particularity of qualitative methods of representation, synthesis and analysis.[1065] This can be seen to relate to the lantern's mediating role as a device of 'analogical demonstration and illusion' advanced by historians of science.[1066]

Via a chiastic inversion of the focus on the field as a site of observation, Bell positioned sites of learning and teaching in the UK as powerful interstices of fin-de-siècle, and early twentieth century, geographical modernity. The convergence of scientific and humanities practices in a key tenet of geography, the art of observation, was seen as the means of engendering in citizens 'a powerful combination of rational judgment, aesthetic appreciation and moral evaluation.'[1067]

In lantern studies, via discussions of Kircher and Vallemont's lantern practices, Vermeir showed how 'text, illustration and display interact in a complex and specific way to form such an analogical demonstration'.[1068] This, he argued, 'shows and explains at the same time, just like a symbol or emblem' in a similar way to the attributes projected on to icons as we saw in the assessment of della Dora's work above.[1069] The aesthetics of diverse sciences, and the commonalities as well as the particularities between images classified as either scientific have been acknowledged more latterly in histories of photography by Tucker, Wilder, Ryan and Edwards.[1070] Below I therefore show the lantern's role in demonstrating what was in the

[1065] M. Cope, A history of qualitative research in geography in (Eds) D. DeLyser, S. Herbert, S. Aitken, M. Crang and L. McDowell, 2010 *The SAGE handbook of qualitative geography*, SAGE, London, in Withers, Science, scientific instruments and questions of method in nineteenth-century British geography, 168.
[1066] K. Vermeir, The magic of the magic lantern (1660–1700): on analogical demonstration and the visualization of the invisible, *BJHS* 38 (2), 157.
[1067] Bell, Reshaping boundaries, 162.
[1068] Vermeir, The magic of the magic lantern (1660–1700), 157.
[1069] della Dora, Inverting Perspective, 239-246.
[1070] Edwards, *The Camera as Historian*, Wilder, *Photography and Science*.

nineteenth century described as the art of geography.[1071] Finally, the chapter concludes with a discussion of Freshfield's role in bringing to the Society methods of geographical science.

The lantern and the sentient science of geography

To the claim, referred to in Chapter 5, that the lantern would diminish the scientific nature of the RGS lectures, the reformers countered that 'dioptric lantern' projections would enhance the scientific value of meetings.[1072] We are told that this argument, and the fact that slides were received with an enthusiasm that 'soon rendered them more or less irresistible', eventually won over the Council.[1073] Later upon Markham's death in 1916 Freshfield commented on his and Markham's behind-the-scenes involvement in converting the Society to the lantern, and on the impressive applause from the audience to an early lantern-slide lecture.[1074]

Galton, Sir General Richard Strachey, Freshfield and others among the RGS reformers in the 1870s and 1880s supported the promotion of scientific methods of geography.[1075] The reform movement at the RGS did not conclude with the founding of the Oxford Readership in geography in 1887. Nor was Oxford the single location in which academic geography emerged as the RGS knowledge making practices continued to shape the episteme of geography.

Keltie's education report of 1885, the 'Scope and Methods' lantern-slide lecture and the Society's push to promote geography education

[1071] Vermeir, The magic of the magic lantern (1660–1700), 157; J. Thomson, 'Photography and Exploration', *Proceedings of the RGS and Monthly Record of Geography*, New Monthly Series 13 (11), (Nov., 1891), 669-675.
[1072] Mill, *The Record,* 103.
[1073] D. Freshfield's address at The Centenary Meeting: Addresses on the History of the Society, October 21, 1930, *Geographical Journal*, (December 1930), 465.
[1074] Death of Sir Clements Markham, *The GJ* 47 (3), (Mar., 1916), 163.
[1075] Mill, *The Record;* Jones, Measuring the world.

triggered a response in Fellows. After 'Scope and Methods,' further lectures incorporated lantern-slides. This was not, however, reported in the transcripts of the lectures and discussions, nor in the Report sections of the meetings as doubts regarding the authority of the medium persisted. The exclusion of this information from the *Proceedings* indicates the 'transition period' of lantern use between 1886 and 1888.[1076] Accessioned lantern-slides were recorded in the Map Room ledger, completed by Map Curator, John Cole, or his assistant, Edward Reeves. In the case of 'Melanesian Cruises' assessed in Chapter 5, and 'Scope and Methods' only images used to illustrate the 'Melanesian Cruises' lecture were accessioned. These were registered as 'photographs' in the ledger.[1077] The word 'photographs' may have been intentionally employed in order to conceal the use of a medium that caused dissent. However, an alternative explanation presents itself. If the crew of the Espiègle only had photographs rather than lantern-slides to show to the Society, and the fact that some forward planning was required to make lantern-slides from the photographs, then further weight is lent to the argument that it was the staff, the Secretary, Thomson and Freshfield, who conspired to bring about the use of the lantern in that first instance. The Map Room ledger contains no reference to lantern-slides purchased from, or donated by, Mackinder in 1887. However this can be explained by the fact that he would have required the lantern-slides for additional lectures and not wished to part with them.

The first relevant reference to a 'magic lantern-slide' occurred in March 1887, suggesting that Map Room staff embraced lantern use and saw no need to deny the medium's association with entertainment, or occult

[1076] Reeves, *Recollections of A Geographer,* 36.
[1077] RGS Map Room ledger [1886], 46.

forces, indicated by the more cautious use of the term 'dioptric lantern'.[1078] Indeed, the term 'magic lantern-slide' was consistently used throughout the ledger. Throughout early 1887 lantern-slides were projected in further lectures with increasing regularity.[1079] That the Map Room purchased rather than merely acquired some, if not all, of the lantern-slides used in these lectures and on the very day the lectures were delivered, demonstrates the commitment of the Map Room, if not quite yet of the Council, to invest in the medium.[1080] Following this there seems to have been a drop in lantern-slide use within the meetings between May 1887 and April 1888. If the lantern was used then it was not specified in the *Proceedings* or in the Map Room ledger. Freshfield remarked in one post-lecture discussion his regret that the speaker's photographs had not arrived in time to produce lantern-slides to illustrate the lecture and stressed the importance and ease of taking 'photographic machines' on expeditions.[1081] Non-photographic illustrations were shown and the attention frequently drawn to them implies that these were well received by audiences. Such images were displayed on a table somewhere within the lecture theatre for observation after the discussion. Mr Steains was praised for being 'a vigorous and successful explorer', but his drawings of Brazil also showed him to be 'a skilled draughtsman', a gift no doubt not given to all explorers and travellers.[1082]

[1078] 'Set of 19 magic lantern-slides made to illustrate Mr. E. Delmar Morgan's paper on Col. Prejevalsky's journeys in Central Asia […] Received 19th March 1887. Purchased […]' (RGS Map Room ledger, 1887, 288).

[1079] D. Morgan, Prejevalsky's Journeys and Discoveries in Central Asia, 213 and Dr. Junker's explorations in the region between the Nile and the Congo, Mr Wills, March 28th 1887, *Proceedings of the RGS*, New Monthly Series 9 (5), (May, 1887), 285.

[1080] 19 lantern-slides from Delmar Morgans' lecture and 12 from Wills' lecture were purchased by the RGS (RGS Map Room ledger, 1887, 288).

[1081] H. W. Seton-Karr, The Alpine Regions of Alaska, *Proceedings of the RGS*, New Monthly Series 9 (5), (May, 1887), 283. Paper delivered March 14th 1887.

[1082] W. J. Steains, 'An Exploration of the Rio Dôce and Its Northern Tributaries (Brazil)', *Proceedings of the RGS*, New Monthly Series 10 (2), (Feb., 1888), 84.

Douglas Freshfield: reformer of the RGS

Of the RGS reformers relatively little has been written about Freshfield, who had trained as a lawyer and went on to become a mountaineer, notably of the Caucasus region.[1083] A close reading of Freshfield's letters to Bates throughout the 1880s and 1890s reveals Freshfield's concern for evidencing statements of geographical knowledge with artefacts and images that could be collectively and discursively interrogated.[1084] Lectures at the Alpine Club, where Douglas Freshfield was Honorary Secretary and journal editor, were already, by 1886, and just a matter of weeks before the RGS' first recorded use of the lantern, illustrated by the lantern.[1085] Since the early 1880s large photographic reproductions, drawings and watercolours were frequently exhibited at the Alpine Club meetings, exhibitions and soirées. Throughout 1887 lantern projections featured in further lectures on the Caucasus, for example by Freshfield, and to display photographs of the same region by de Dechy and Donkin.[1086] The Club's journal, under the editorship of Freshfield, was by this time also heavily illustrated with reproductions of wood engravings, lithographic maps and other images well before the RGS *Proceedings*. Freshfield sought to dynamize the Society's exhibitionary practices too. Consequently, in the first part of this chapter I focus on how the dissenters within the RGS Council were dissuaded of their prejudices and finally convinced of the lantern's utility through the projection of 'an exceptionally beautiful' set of slides.[1087] In what follows I argue that this

[1083] Mill, *The Record.*
[1084] RGS/ CB7 (1881 - 1910) Freshfield, D. W. *Folder 2 (1890-92) / 35: Douglas Freshfield correspondence to H. W. Bates* 10th August (or April) [No year]; November 6th 1891; 19.1.90; 9.1.90.
[1085] Proceedings of the Alpine Club, *The Alpine Journal* XII, (May 1886), 532.
[1086] Proceedings of the Alpine Club, *The Alpine Club Journal* XIII (August 1887), 351; Proceedings of the Alpine Club, *The Alpine Club Journal* XIII, (August 1887), 572.
[1087] Obituary of J.S. Keltie. D. W. Freshfield, D. and H. R. Mill, *Geographical Journal*, (1927), 283.

particular set was associated with Freshfield's 'Suanetia' lecture of 1888.[1088]

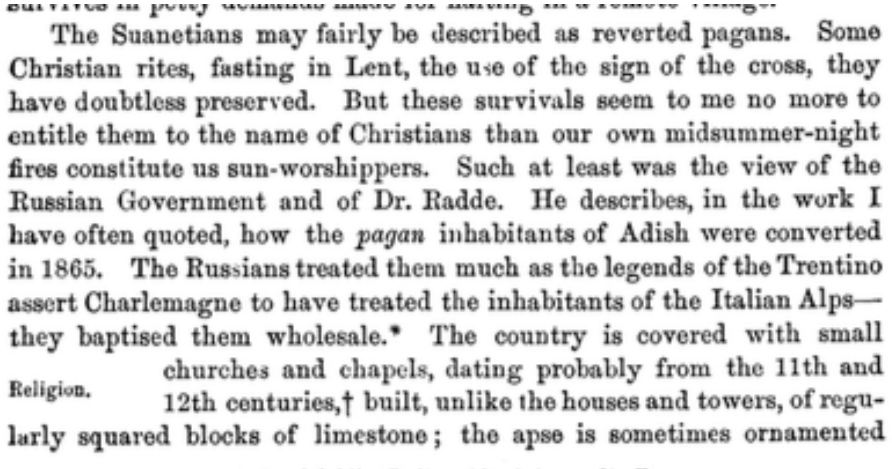
There was a marked change in the Society's engagement with the lantern in April 1888 when Freshfield lectured on the Caucasus region of 'Suanetia' with lantern-slides from M. de Dechy's photographs. This was the first lecture transcribed in the *Proceedings* to state the use of the 'dioptric lantern' in print directly after the paper rather than in a separately published Report of Meetings at the very back of the *Proceedings*.[1089] Stoddart argued that Freshfield was 'largely responsible for the development of the cult of mountaineering in Britain' at the end of the nineteenth century.[1090] Further exploration of Freshfield's relationship with the RGS thus informs historical geographies of mountain regions.[1091] Additionally, in the manner of 'travelling landscape-objects', lantern-slides created a place for pictures and the lantern in the RGS lectures and publications.[1092]

Hints of the lantern's use were further suggested by the twelve indexical section titles, printed in a small font, and indented to the left of the lecture text. These thematic titles referred to history, religion, architecture, language and topographical subjects amongst others (Figure 26). This constitutes yet another example of the experimental methods employed by the Society in both lectures and its publication in this period of the later 1880s. Moreover, the short section titles were imagistic and, as well as helpful in breaking up and organising the substantial body of text, they portrayed the topic addressed and helped the reader to situate themselves and the knowledge transcribed in relation to wider issues. In this way a

[1088] D. W. Freshfield, Suanetia, *Proceeings of the RGS, (*March, 1888), 325-351.
[1089] Freshfield, Suanetia, 349.
[1090] Stoddart, The RGS and the 'New Geography', 199.
[1091] V. della Dora, Mountains and memory: embodied visions of ancient peaks in the nineteenth-century Aegean, *Transactions of the Institute of British Geographers NS* 33 (2), (Apr., 2008), 217-232.
[1092] della Dora, Travelling landscape-objects, 335.

comparative approach to both topography and cultural themes was promoted and facilitated.

The text reproduced in Figure 26 evidences Freshfield's awareness of solar myth theory. Solarism, developed by the German, Oxford-based, Friederich Ernst Müller (1832-1900), employed comparative methods of philology to study myths and was popular before the anthropological methods of Edward Burnett Tylor (1832-1917) gained acceptance.[1093] Such approaches touch, in my view, upon the numinous aspects of geography, but also of anthropology and science more generally, discussed in Chapter 2.



The Suanetians may fairly be described as reverted pagans. Some Christian rites, fasting in Lent, the use of the sign of the cross, they have doubtless preserved. But these survivals seem to me no more to entitle them to the name of Christians than our own midsummer-night fires constitute us sun-worshippers. Such at least was the view of the Russian Government and of Dr. Radde. He describes, in the work I have often quoted, how the *pagan* inhabitants of Adish were converted in 1865. The Russians treated them much as the legends of the Trentino assert Charlemagne to have treated the inhabitants of the Italian Alps—they baptised them wholesale.* The country is covered with small churches and chapels, dating probably from the 11th and 12th centuries,† built, unlike the houses and towers, of regularly squared blocks of limestone; the apse is sometimes ornamented

Religion.

Figure 26. Example of indexical section title from D. W. Freshfield, 'Suanetia', *Proceedings of the Royal Geographical Society,* March 1888, 329.

Celebrating not so much professionals or practitioners of science, Freshfield instead underlined how 'travellers - or vacation tourists' could 'find pleasure and refreshment in rough travel among primitive people, in mountain scenery and glacier air, in that sense of adventure and discovery which is afforded only by unknown countries, or virgin heights and an unmapped

[1093] I. Strenski, The spiritual dimension in H. Kuklick (Ed.), *A New History of Anthropology*, Blackwell, 2008, 115-123.

snowy chain.'[1094] In the Caucasus, he affirmed,

> […] if they make a hobby of map-construction and correction, or of any branch of natural science, or of linguistic and ethnological studies, they will find a field for much useful work. At any rate they may enjoy themselves, and while they do so they can hardly fail to increase knowledge.[1095]

Such views lend weight to Ashley's assertion that, in the 1880s, a fascination with nature and the primitive prevailed amongst the British.[1096]

References to the sublime appeared liberally in this lecture.[1097] Freshfield emphasized the adventure and the experience of the Caucasus and, employing colourful language, graphically described the scenery:

> The actual pathfinding was sufficiently difficult to be amusing, the situation was stirring. The scenery was more fantastically lovely than a child's dream after a pantomime. Huge towers of milk-white snow shone against the dark blue heaven - blue is not here a conventional epithet; green icicle-hung vaults yawned between them. The planets were something more than mere points of light, they were glowing balls. Slowly they faded, and a light played in the sky behind Tetnuld; arrows of day light flew round the edge of the world high in the air above us; other arrows seemed to rise to meet them from the sea. It was very long before the light touched earth. But at last the great dome of Elbruz, the snowy heads of Ushba, flashed out, first red, then golden, above all the lower heights. In a few minutes the frosty Caucasus was flooded with golden light; the shadows crept away under the loftiest peaks. Only the Black Sea basin lay still sombre in the western hollow beyond the grey crests of Abkhasia.[1098]

Apologising for not having performed precise measurements, Freshfield nevertheless defended the exploratory efforts of mountaineers who opened up the way for more precise surveys, stating:

[1094] Freshfield, Suanetia, 325.
[1095] Freshfield, Suanetia, 326.
[1096] M. Ashley, *Out Of This World, Science Fiction: but not as you know it*, The British Library, 2011, 112.
[1097] Freshfield, Suanetia, 339 and 344.
[1098] Freshfield, Suanetia, 338.

> I am afraid I enjoyed the next hour more than a Secretary of this Society ought to have done. I might have been boiling thermometers, and making all sorts of observations. But I would put in a plea for the makers of first ascents. May they not enjoy the poetry of the mountain tops?[1099]

Thus the lecture, in both the visual and verbal elements, can, arguably, be understood as an almost certainly calculated effort to demonstrate inclusivity, the value of non-professional travellers who might make useful observations on subjects such as anthropology, and to publically sanction the pleasure afforded by travel.

In Bell's study aesthetic practices were theorized as the meeting ground of the intellect and the senses, and are taken as co-constitutive of emergent widening scales of a fin-de-siècle modern, international and environmental consciousness in geography. Yet these are connected to 'modern scientific and technological knowledge,' without any specification of which technologies, but also thereby excluding the transcendental or 'numinous' experiences they engendered.[1100] Numerous studies now present persuasive arguments for a longer tradition of the remediation of romantic ideals across a wider array of sciences and throughout the nineteenth century.[1101] Here this study also shows that an explorer, of independent means and no fixed profession, such as Freshfield, can also be understood as a producer and propagator of this aesthetic modernity

[1099] Freshfield, Suanetia, 345.
[1100] Bell, Reshaping boundaries, 158; della Dora, Inverting perspective.
[1101] Levine, Daring to know: Karl Pearson and the Romance of Science in *Dying to Know Scientific Epistemology and Narrative in Victorian England*; Trowbridge, 'Speakers concerning the earth': Ruskin's geology after 1860, 17-30, in Clifford, Wadge, Warwick and Willis (Eds**)** *Repositioning Victorian Sciences*; Holmes, The X Club: Romanticism and Victorian Science in Clifford, Wadge, Warwick and Willis (Eds), *Repositioning Victorian Sciences*.

within the lantern-slide lectures of geographical projections spaces.

The lantern-slides were, however, in this instance, displayed after the paper, as they were in the 1886 'Melanesian Cruises' lecture. Here the lecture and images were therefore not synchronised.[1102] The *Proceedings* reported that 'At the conclusion of the paper, Mr. Freshfield exhibited, by means of the dioptric lantern, a series of sixty photographic views, of which about two-thirds were taken by his companion, M. de Dechy, of the high peaks, passes, glaciers, villages, and people of the Central Caucasus.' (Figures 27 and 28.) [1103]

Figure 27. Douglas Freshfield 'Suanetia' (March 1888), from a photograph M. de Dechy or V. Selous (set 101). (RGS-IBG) Used with permission of the publisher.

[1102] R. Dixon, *Photography, Early Cinema, And Colonial Modernity: Frank Hurley's Synchronized Lecture Entertainments*, Anthem Press, 2012.
[1103] Freshfield, Suanetia, 349.

Figure 28. Douglas Freshfield 'Suanetia' (March 1888), from a photograph M. de Dechy or V. Selous (set 101). (RGS-IBG) Used with permission of the publisher.

A map of the region produced by the RGS Map Drawing Office accompanied the published lecture.[1104] Moreover, the bold announcement of lantern use in print was shrewdly illustrated by a full-page woodcut of a spectacular mountain view, titled Ushba, by the artist and mountaineer Edward Whymper (Figure 29.).[1105] Framed in arched vignette-style, and thus re-iterating in part the image in Figure 29, the image was typical of lantern-slide projections of the time. The inclusion of this spectacular

[1104] However, we cannot be certain if the woodcut was by the sole hand of Whymper or by his studio. (See I. Smith, *Shadow of the Matterhorn*, *The Life of Edward Whymper,* Carreg Ltd. 2011)
[1105] Freshfield, Suanetia, 340.

woodcut suggests that the lecture, and the images displayed in it, were considered worthy of celebration. Such issues lead us to consider what motivations drove the use of illustrations in the *Proceedings* and meetings, and indeed which came first. Was the Society motivated solely by the desire to render its meetings and publications more scientific via the inclusion of images or was there also an underlying commercial incentive? Later the Society's Map Room accessioned both photographs of de Dechy's images[1106] and the projected lantern-slides.[1107] Although the ledger states that forty magic lantern-slides of views in the Caucasus were accessioned, only twenty-two were purchased; given the fact that the Map Room budget was restricted it is possible that either Freshfield or de Dechy donated the remaining slides.[1108]

[1106] RGS Map Room ledger 1888, 345.
[1107] RGS Map Room ledger, 1888, 346.
[1108] RGS Map Room ledger, 1888, 346.

USHBA.

(*From a Photograph by* M. DE DÉCHY.)

Figure 29. Ushba, after a woodcut by Edward Whymper, from a photograph by M. de Déchy (D. W. Freshfield, 'Suanetia', *Proceedings of the Royal Geographical Society,* March 1888, 340).

That the aesthetic qualities rather than scientific utility of lantern-slides established the medium's authority to represent and demonstrate constitutes yet another paradox in the story of the RGS's adoption of the lantern.[1109] The lecture, and the positive reception of the lantern-slides that accompanied it, comprised an instance of both the transmission of information and the engendering of transformation.[1110] Via yet another inversion Freshfield, one of the key reformers who, likely, earlier argued for the lantern's scientific utility, employed the medium to display an aesthetically powerful lantern-slide set. The notion of 'beauty' was complex and defined in multiple ways, and in relation to particular visual assemblages with particular historical and geographical inflections. Yet the value of the concept to, and the force it was seen to exert upon, the development of the Society and indeed geography, should not be underestimated. Below I examine more closely late nineteenth century spatial and historical conceptions of geographical science and 'picturesque' aesthetics.

Lantern-slides 'soon became indispensable'[1111] and Mill later referred to this progressive adoption of the lantern as 'a great step forward'.[1112] In overcoming old prejudices against the lantern 'a movement was initiated which was destined to bear rich fruit in later years.'[1113] The status of the lantern was thus transformed following Freshfield's 'Suanetia' lecture. The positive reaction of Fellows demonstrates the authority the Fellowship exerted over the Society's practices. Indeed the Society's finances were so

[1109] Wiseman, *Lévi-Strauss, Anthropology and Aesthetics*.
[1110] Latour, *On the Modern Cult of The Factish Gods*, 102.
[1111] Keltie, Thirty years' 358.
[1112] Mill, *The Record*, 103.
[1113] Mill, *The Record,* 98.

precarious that it could not afford to lose the favour of the Fellows. Because they carried such weight in the decision to integrate lantern-slides into lectures the Fellows can thus can be understood as important shapers of geography's epistemic practices. Not only had the individual councillors' eyes and minds been reasoned with, but their senses had also been appealed to, when, 'the almost surreptitious introduction of a singularly beautiful set overcame all prejudices'.[1114] As well as the sensual stimulation provided by the projections, the Society's financial interests could also have been a decisive factor in the technology's adoption as throughout the second half of the 1880s, the first years of lantern use, the Fellowship numbers dropped.[1115] This period coincided with the reformation of the Society as successive councils dominated by liberal-minded individuals, thrust ahead with the promotion of geography education.[1116] That efforts to promote education and science gained in vigor, but failed to carry its unsettled Fellows, is evidenced by the fall in Fellowship numbers, which only started to grow again in 1889-90 (Figure 15).[1117]

Further references to the lantern were recorded within the lecture transcripts and the Report of the Evening Meetings sections in the *Proceedings*. The advance advertising in the *Proceedings* of papers to be illustrated by lantern-slides was an innovation of the late 1880s. Such notices appeared from December 1889 announced:

> After the paper, Mr. A. P. Goodwin, a member of the expedition, will exhibit his series of lantern-slides

[1114] D. Freshfield and H. R. Mill, Obituary of J.S. Keltie. *Geographical Journal*, 1927: 283.
[1115] ACRS
[1116] Between 1886-87 and 188-89 the Fellowship declined from 3392 to 3352. (Anniversary Meeting, 1887: 446; Anniversary Meeting 1888: 459; 1889 Anniversary Meeting, 443).
[1117] Across 1889-90 there was an increase of 161 fellows to 3513 (1890 Anniversary Meeting, 479).

> illustrating the scenery, natives, &c., of the country passed through. [1118]

This suggests the greater coordination of lecture programmes by the Society. The novelty value of lantern-slide lectures and the Society's intention to attract and appeal to audiences by stating the inclusion of topographical and figurative projections. Lantern-slides continued to be projected both within the body of the Evening meeting lectures and, occasionally, at the end of papers as seen above. Therefore the equation of visual modernity and synchronization proposed by Dixon is particularized according to the practices of the RGS.[1119] After Freshfield's 1888 'Suanetia' lecture lantern use became more frequent. Even the admirals took to the lantern.[1120] This was the Hydrographer to the Royal Navy, Captain Wharton, whose 1888 paper 'Account of Christmas Island, Indian Ocean' was accompanied by 'a series of photographic views of the island shown by the dioptric lantern, and by diagrams explaining its singular geological structure and history.'[1121] However, the published transcript of his lecture contained no reference to the lantern and, as with the first lantern-illustrated papers, the fact was specified separately in the Report of the Evening Meetings at the back of the *Proceedings,* thereby signalling on-going uncertainties about the lantern.[1122]

Photography and the topographical and human picturesque

[1118] 'Geographical Notes', *Proceedings of the RGS*, New Monthly Series 11 (12), (Dec., 1889), 738.
[1119] Dixon, *Photography, early cinema, and colonial modernity.*
[1120] RGS Additional papers 11, Freshfield, D. Draft of 'Quips for Cranks', [1924]: 23 – 29.
[1121] Report of the Evening Meetings, Session 1887-8. Proceedings of the RGS, New Monthly Series 10 (8), (Aug., 1888), 537.
[1122] Wharton, Captain W.J. L., Hydrographer to the Admirality, Account of Christmas Island, Indian Ocean, *Proceedings*, October 1888 (Read at the Evening Meeting, June 25th 1888).

Aesthetic form influenced perceptions of veracity; the truth was thus mutable and plural. The iconographic range of RGS lantern-slides included cartoons, diagrams and coloured images. 'Slideness' was therefore not singular, but plural at the RGS, and dependent upon the specific image forms held within slides.[1123] Audience responses evidence their belief, common to both Evening and Technical meetings, of an aesthetic truth, by which I mean that which moved and provoked a sensual response was given credence. As stated above, photographs and maps were not the only image type to be projected via the lantern. The ways in which the popularity of lantern-slides, especially coloured ones, would come to be viewed with suspicion by twentieth-century academics such as Lévi-Strauss was signalled by Driver.[1124] Here Rose's theoretical discussion of the striking, 'compelling' force and luminosity of coloured slides set against the darkened lecture theatre,[1125] is complemented by della Dora's perception of the numinous in audience responses to lantern-slides.[1126] Whilst the enhanced power of the display of coloured lantern-slides in attracting attention and an audience's gaze has not yet been discussed in historical geography, Ryan's contrasting of Livingstone's Zambesi expedition photographs and watercolours provides a point of departure.[1127] The translation of the physical geographical referent into any form of representation, Ryan recognized as 'inadequate'; a photograph might lack 'drama, scale or colour of the scene'.[1128] For instance, it was recognized that sketches could convey a subject from multiple perspectives in a way

[1123] Rose, On the need to ask how, exactly, geography is 'visual'?, 214.
[1124] Lévi-Strauss, *Tristes Tropiques*, 1-2 in Driver, *Geography militant,* 1.
[1125] Rose, On the need to ask how, exactly, geography is 'visual'?, 213.
[1126] della Dora, Inverting Perspective.
[1127] Ryan, *Picturing Empire,* 217 -218.
[1128] Ryan, *Picturing Empire,* 218.

that photography could not.[1129] A further significant contribution from Ryan, borrowing and adapting from Krauss, was in the identification of the late nineteenth-century perspective in which 'any boundary between the "view" in science and the "landscape" in art was not fixed; both operated within a range of contexts, including those of artistic genre and scientific record.'[1130] Wilder and Edwards have concurred with this argument.[1131]

John Thomson's 1891 BAAS 'Photography and Exploration' lecture reveals the changing historical geographies of photography as it became increasingly adapted to geographical practices in the field as an instrument of recording, and in the class room and lecture theatre for teaching purposes.[1132] The paper exposed the changing geographies of geography as photography became a practice integral to the scientific method of a geography that aspired to, and from 1887 had arguably achieved, the status of a science. Nevertheless, in the then fin-de-siècle climate of 'the cult of science' the cultural and scientific legitimacy of geography had to be determined through what were deemed to be scientific methods. [1133] Through Freshfield's criticisms of the older practitioners of armchair geography of the first half of the nineteenth-century and the rise, and gaining of cultural authority, of the scientific naturalists and evolutionary naturalists and the converse demise of the Oxbridge-educated Anglican gentlemen of science, is seen.[1134] Scientific naturalists relied on the method of empirically observed workings of nature that were then interpreted

[1129] Ryan, *Picturing Empire,* 218.
[1130] Ryan, *Picturing Empire,* 221.
[1131] Wilder, *Photography and Science*; Edwards, *The Camera as Historian*.
[1132] Thomson, Photography and Exploration, 669-675.
[1133] Beatrice Webb, 1950, 112 in Lightman, *Victorian Popularizers Of Science*, 5.
[1134] Lightman, *Victorian Popularizers Of Science,* 6.

scientifically in light, notably, of the theory of natural selection.[1135] Photography, and the display of visual evidence, came to assume a key role in the practices of this ascendant younger generation. By 1891 Thomson declared to a BAAS audience that 'Where truth and all that is abiding is concerned, photography is absolutely trustworthy, and the work now being done is a forecast of a future of great usefulness in every branch of science.'[1136] Such words recall Shapin's observation of trust's material inscriptions.[1137]

Cosgrove asserted that the distinction between science and art was fashioned in the nineteenth century.[1138] Driver, Ryan and Hawkins, however, suggested that rigid boundaries between the two categories were more porous. The terms were particular to specific media supports and individual imaginaries.[1139] Yet even in the nineteenth century there was not a marked difference between 'fiction' and 'exploration narratives' and even if the distinction applied in published texts, then it did not systematically entail its presence other media or narrative forms of knowledge.[1140] Definitions of fiction or romance, as opposed to exploration narrative, might be usefully parallelled with those of science and art. Regarding the epistemological specificity of enchanted phenomena, Schneider conceived of particular epistemic registers, in order to distinguish the 'fictional' and the 'factual,' or the imaginative and the instrumental.[1141] These too are often conceived as contradictory and opposing cultures. However, historians of photography

[1135] Lightman, *Victorian Popularizers Of Science,* 6.
[1136] Thomson, Photography and exploration, 673.
[1137] Shapin, Placing the view from nowhere: historical and sociological problems in the location of science, 8.
[1138] D. Cosgrove, 'Maps, Mapping, Modernity: Art and Cartography in the Twentieth Century', *Imago Mundi*, Vol. 57 (1), 2005, 36.
[1139] Driver, *Geography Militant*, 2; Ryan, 'Photography, Visual Revolutions and Victorian Geography', 205 and 221; Hawkins, *For Creative Geographies,* 27.
[1140] Driver, *Geography Militant*.
[1141] Schneider, *Culture and Enchantment*, 10.

have recognized that each were, and continue to be, overlapping and riddled with complexities. Thomson's 1891 paper exemplifies this.

If, for Driver, fictional travel tales might come from explorers who had direct experience of travel, then for Thomson, the practitioner of photography and producer of visual narratives, it was clear that he viewed armchair geographers who had not carried out observations in the field, as producers of romances of travel.[1142] Moreover, despite the fact that he advanced that the camera 'affords the only means, with which I am acquainted, of portraying visible objects with scientific accuracy', he subsequently stated that 'Every photograph taken with an achromatised and corrected lens is a perfect reproduction to scale of the object photographed, as seen from the point of view of the lens.'[1143] Despite emphasizing the camera's utility as a scientific instrument that could produce notionally objective, and durable, observations, and his criticisms of those text- rather than visual imagery-producing scholars who used 'the free play of fancy' to produce pictures of their own creation, Thomson recognized some of the qualities of the 'effect of romance'.[1144] Indeed he could not completely deny photography these qualities, nor the status of 'art'. As Ryan noted, Thomson had since 1873 been promoting his own photographic practice as both art and science since he had first exhibited his collection of photographs of Formosa at the RGS.[1145] Thus Thomson concluded his 1891 BAAS lecture 'Photography and Exploration' with six points about his photographic instruction courses and the promise that he would teach 'The character of the work to be done and the method of doing it so as to render

[1142] Thomson, Photography and exploration, 670.
[1143] Thomson, Photography and exploration, 669.
[1144] Thomson, Photography and exploration, 670.
[1145] Ryan, Photography, visual revolutions and Victorian geography, 218.

all photographs taken available for scientific or artistic use.'[1146] From this statement it seems that Thomson did not, in that instance, and not where the methods of photography he practiced were concerned, consider 'scientific or artistic use' as mutually exclusive categories. Instead photography could simultaneously be scientific and artistic in methods and usage.

- As well as informing the range of iconographic forms taken by geographical knowledge, the RGS lantern-slides inform conceptions of the topographical and human picturesque. Contingent to visual historians' and historical geographers's concerns with the production of, and transformations to landscape, is the employment of the term 'picturesque'. Reflections upon changing definitions of this term, and its remediation in diverse material incarnations, are ongoing.[1147] For Cosgrove, 'That sense of rupture and loss that accompanies modernity, and to which some observers have attributed the invention of nostalgia in the later eighteenth century, is fundamental to the picturesque sensibility.'[1148] The notionally 'picturesque' was, Cosgrove insisted, inflected with 'static' and 'monolithic' qualities.[1149]
- In its photographic forms, the picturesque has been theorized from numerous disciplinary perspectives. Ryan's studies of photographic histories and the very production of geographical knowledge and space elucidated the 'ethnographic picturesque'.[1150] Robinson, recently, also attended to the

[1146] Thomson, Photography and exploration, 673.
[1147] Schwartz, *The Geography Lesson, 32; Ryan, Photography and Empire, 61 and 65;* Ryan, *'Photography, Visual revolutions and Victorian geography', 221; Cosgrove, 'Maps, Mapping, Modernity', 47-50;* Cosgrove, *Geography and Vision, 136-138;* della Dora, 'Putting the World into a Box', *288 and 294;* C. DeSilvey, 'Making sense of transience: an anticipatory history', 2012, 31–54; Edwards, *The Camera as Historian*, 85; H. Hawkins, *For Creative Geographies: Geography, The Creative Arts And The Making Of Worlds*, Routledge, 2014, 6, 7, 27 and 221.
[1148] Cosgrove, *Geography and Vision, 136-138.*
[1149] Cosgrove*, 'Maps, Mapping, Modernity',* 47 and 50.
[1150] Ryan, *'Photography, Visual revolutions and Victorian geography',* 214.

generation of anthropological knowledge by explorers from the 1870s onwards in the Third Age of Discovery.[1151] Photography's role in the creation of historical knowledge and the conception, and visualization of time, Edwards argued, dressed parallels between pictorialism and the picturesque: 'Closely related, although not exclusively so, to the picturesque in terms of its subject matter – often landscapes, rural idylls, and allegories of life and work – the pictorial was the pursuit of the beautiful through hand control over colour, tone, detail, and the making of ''pictures''.'[1152]

Latterly, Hawkins, envisioned geography's evolving landscape "visions" as spatial conceptualizations became redrawn by postmodernist and poststructuralist thinking. [1153] Myths of notional 'real' worlds that could be seen or experienced via the 'transparent window' of artistic representations were exposed.[1154] Recast in a Marxist light, landscapes were reconceived as 'aesthetics that "veiled" the complex power relations that shaped both material landscapes and their representations, forming duplicitous images whose ideal forms – the English picturesque, the rural idyll – came to shape landscapes and lives around the world'.[1155]

Historians of photography, Edwards and Wilder, demonstrated the uncertain status of photography and photographs in nineteenth-century British culture and science.[1156] Such images's ambiguity rendered them polyvalent and useful for diverse scientific purposes.[1157] Despite the

[1151] Robinson, Science and exploration, in Kennedy (Ed), *Reinterpreting Exploration,* 30-32.
[1152] Edwards, *The Camera as Historian*, 85.
[1153] Hawkins, *For Creative Geographies,* 6 and 7.
[1154] Hawkins, *For Creative Geographies,* 6.
[1155] Hawkins, *For Creative Geographies,* 7.
[1156] Ryan, Photography, visual revolutions and Victorian geography Wilder, *Photography and Science*; G. Rose, *Visual Methodologies: An Introduction To Researching With Visual Materials*, SAGE, 2012.
[1157] Tucker, *Nature Exposed*; Tucker, Objectivity, collective sight, and scientific personae; Edwards, *The Camera as Historian*.

incremental use of the lantern in RGS lectures from 1886, post-lecture discussions indicate prevailing uncertainties over the value of notionally 'picturesque' photographic projections. This informs the initial objections raised to the lantern and its association with children explored in Chapter 4. Yet it also highlights the value of geography's bridgning, even liminal, status, since it appealed to a plethora of interests.

The multiple instances in which audiences expressed doubt before lantern-slide projections in lectures evidences how the RGS lantern-slide practices do not accord with the proposition that landscape-objects are 'worlds in miniature visually and physically possessed by the beholder'.[1158] Undoubtedly, the material lantern-slide medium was tangible and graspable. Nevertheless, responses of audiences attending lectures suggest that definitions of the worlds the lantern-slides were believed to represent were, at times, ill-defined, and difficult to grasp either visually in the lecture or physically via direct experience in the field. Each lantern-slide lecture presents a different picture and despite the common medium it is impossible to generalize.

Figurative and landscape projections could, it seems, threaten, or deplete, the imagined authority of topography. As stated in Chapter 2, scholars have become aware of the diversity of lantern-slide iconography.[1159] A notional photographic 'realism', Ryan advanced, could 'not be taken as an implicit part of 'slideness'.[1160] Subsequent studies demonstrated that cartoon slides were widely-used in the late nineteenth

[1158] della Dora, Travelling landscape-objects, 335.
[1159] Ryan, Who's afraid of visual culture?, 233.
[1160] Ryan, Who's afraid of visual culture?, 233-234.

century and into the early twentieth century.[1161] Edwards extended historical geographies of the picturesque as it came to be remediated in photographic form throughout her study of fin-de-siècle amateur photographic practices.[1162] Related to the picturesque, however, is the projection of secular evolutionary views on to landscapes. This is paralleled in the assumptions that landscapes were imbued with quasi-human characteristics and anthropomorphic qualities, albeit culturally specific ones, and that these shaped the values of human cultures that subsisted within them.[1163] A view that topographical and human features were, if not one, then mutually constituting, and that space was also part of a culturally and temporally-specific hierarchized framework of evolutionary theory prevailed. Below I discuss these themes in relation to some of the RGS's extant hand-drawn and painted lantern-slides and in relation to RGS audience responses to photographic lantern-slides.

The scholarly positions staked out above are of particular relevance in the analysis of the Earl of Dunmore's 1893 'Journeyings in the Pamirs and Central Asia' lecture. I employ them to reflect upon the diversity of lantern-slide iconographic forms, the dynamics of picturesque imagery and their influence on the RGS.[1164] The lecture was accompanied by lantern-slides after Dunmore's own watercolours. These were photo-mechanically reproduced in lantern-slide form and supplemented with hand-colouring. Comprising successive layers of glass, chemicals and coloured pigments,

[1161] A. McAllister, "to assist in the pictorial teaching of temperance", in Vogl-Bienek and Crangle (Eds), *Screen Culture and the Social Question 1880-1914*, 127.
[1162] Edwards, *The Camera as Historian*.
[1163] St. G. Littledale, A Journey Across the Pamir from North to South, *Proceedings of the RGS*, New Monthly Series 14 (1), (1892), 11.
[1164] The Earl Of Dunmore, Journeyings in the Pamirs and Central Asia, *The GJ* 2 (5), (Nov., 1893), 385-398. The paper was read July 3rd, 1893.

they start to diversify the typology of 'travelling landscape-objects'.[1165] In comparison with other extant RGS slides this was unusual since Dunmore and his companions also took photographic apparatus and other instruments with them.[1166] Because of the initial concerns that the lantern would render the RGS meetings less scientifically credible, and the associations of the lantern with children, the decision to display such images before the adult RGS Evening meeting audience, where they were positively received, deserves further attention.[1167] The human impulse to record scenes witnessed on travels by textual, graphic or photographic means, or indeed by abstract measurements, intended for specific audiences reflects the chiastic processes involved in both travel experiences and knowledge making. The reels of film taken, the album or sheets of watercolours recorded by explorers, and the images and experiences they committed to memory comprise further types of 'travelling landscape-objects'. [1168] Yet the choice of these watercolours over the expedition's photographs needs to be contextualized in relation to the lack of images in the final *GJ* publication and in which only a map featured.[1169] This raises questions about whether or not the photographs were the same scenes as those in the lantern-slides taken from the watercolours. Questions also arise about whether the images were withheld in order to favour the purchase of Dunmore's published book.

The subjects represented, all of which might be described as picturesque and romantic in terms of both the iconography and their

[1165] della Dora, Travelling landscape-objects, 335.
[1166] Dunmore, Journeyings in the Pamirs and Central Asia, 388. RGS-IBG lantern-slide set 401. It originally included 25 slides. The extant lantern-slides are all hand-coloured. The RGS-IBG does not hold Dunmore's original watercolour sketches. Nor do they survive in the archive of John Murray, who published Dunmore's book.
[1167] Mill, *The Record*, 103.
[1168] della Dora, Travelling landscape-objects, 335.
[1169] The map was an existing one on to which Dunmore's and his party's route was drawn.

aesthetics, include a column winding its way through mountains, a white mosque standing on the banks of the Indus river, a monastery perched on a peak, yurts set against a vast green valley backdrop. The pink and purple hues of the sunsets captured by Dunmore infuse the snow clad Pamirs. With regards to scale, there is a marked difference between the figures and landscapes; the minute figures depicted trudging up a narrow pass on horseback or carrying boxes or resting in camp are dwarfed by the grandeur of the Pamirs, plains, peaks and passes. The slides emphasize the adventure, romance and drama of the 2,200 mile journey.

Dunmore described the landscapes traversed and his own reaction to the scenes observed. He also encouraged the audiences to visualize the scenes for themselves:

> The third day the defile widened out a little and opened up fresh beauties to our appreciative eyes at every turn, as we proceeded further eastwards. The scenery, in fact, became so savagely grand that we ceased to grumble at the roughness of the country over which we were travelling, and at our very slow means of progression, viz., 19 miles in two days. Rounding the base of a huge rock we suddenly came face to face with a scene which will live for ever in my memory. To attempt to faithfully describe its chaotic magnificence is almost impossible. Picture a background of wild rugged mountains, whose snow-peaks towered into the sky. Rocks of every fantastic shape, with huge festoons of icicles hanging from their jagged edges; ice-bound torrents and frozen water-falls; huge boulders thrown about in the wildest confusion, the whole foreground seeming to have been lately subjected to some mighty convulsion of nature, and then you can form no idea of the savage splendour of this scene of chaos. After gazing for some time with awe and wonder upon this enthralling picture, whose weird beauty was enhanced by a diaphanous haze which floated over it all, we rode on towards the distant blue hills which marked the termination of this wild gorge.[1170]

[1170] Dunmore, Journeyings in the Pamirs and Central Asia, 395.

The Earl and his companions pitted themselves against the landscape of snowy passes, winding tracks and remote monasteries (Figure 30). Dunmore captured several sunsets in his watercolours and wrote of these at length in his account (Figure 31). Thus his verbal descriptions closely matched the graphic representations seen below.

Figure 30. Lantern-slide 'Crossing the Bojila W. Himalayas' (set 122) from the Earl of Dunmore's 'Journeyings in the Pamirs and Central Asia' lecture, read July 3rd 1893.

Figure 31. Lantern-slide 'A lake in Kashmir' (set 122) from the Earl of Dunmore 's *Journeyings in the Pamirs and Central Asia* lecture, read July 3rd 1893.

The published discussion provides a picture of a section of the RGS Fellowship and Evening meeting audiences at this particularly significant 'interstice' in the Society's affairs, when the debate about the admission of women was at its height.[1171] The decision to host this lecture and project this particular set of images seems pointed. This suggests an awareness at the Society of the multi-valency of images and the potential of this set of lantern-slides to engender delight and pleasure after an acrimonious passage that had threatened the existence of the Society.

The discussion reads like another 'stage-managed' performance. However, this may have been down to Keltie's artful editing of the

[1171] Maddrell, *Complex Locations*, 27-33 and 58-9.

discussion as much as pre-meditation before the lecture on the part of the RGS. The published comments strongly suggest a desire on the part of the Society to demonstrate both the recognition and acceptance of the diversifying Fellowship.

The discussion also evidences the audiences' concern with the practices of scientific methods of observation in travel. For example, Isabella Bishop Bird enquired about the vegetation and the presence or not of edelweiss, and day and night time temperatures, in the high passes.[1172] She herself had journeyed over some of those locales, she stated, and taken measurements. [1173] She speculated that 'the extraordinary disintegrations of the mountains which one sees in Nubra, and specially in the gigantic mountains at the bend of the Shyok may possibly be attributed to these very rapid changes in temperature, occurring in such a dry climate as that of Western Tibet.'[1174] Sir Thomas Gordon declared himself 'an old traveller,' and lauded Dunmore's 'flying account,' 'interesting sketches' and 'pursuit of science and sport'.[1175] Such comments reflect the value set upon the Society as a site in which the expression of the impressionistic art of geography was permitted. This art was both rhetorical and graphic. Gordon then can be understood as being of the old guard of Fellows in his admiration of 'the spirit of enterprise and resolute determination, the love of adventure and sport, and the great powers of endurance the travellers showed in their very severe journey.'[1176]

[1172] Journeyings in the Pamirs and Central Asia: Discussion : Mrs. Bishop, Thomas Gordon, W. M. Conway, G. N. Curzon and Lord Dunmore, *The GJ* 2 (5), (Nov., 1893), 399.
[1173] Bishop, Gordon, Conway, Curzon and Dunmore, 399.
[1174] Bishop, Gordon, Conway, Curzon and Dunmore, 399.
[1175] Bishop, Gordon, Conway, Curzon and Dunmore, 399.
[1176] Bishop, Gordon, Conway, Curzon and Dunmore, 399.

W. M. Conway (later Professor Conway) enquired about the effects of altitude.[1177] Lord Curzon communicated with great charm the fact that he, like Bishop Bird, had travelled through the region visited by Dunmore, endorsed the 'admirable' pictures and publicized the forthcoming illustrated book, the *Pamirs* (Murray 1893) hoping that 'this assembly will follow my own example by buying a copy the first day it appears.'[1178] Thus a further aspect of the propagandizing purposes of the geographical projections space was the promotion of commercial interests.

Such responses arose with increasing regularity at lantern-slide lectures. Walter Harris was praised for the pictures of 'picturesque' villages and panoramic views of the anti-Atlas that accompanied his 1894 lecture, 'A Journey to Tafilet'. [1179] Although Harris was not the maker of these photographs, he told the audience of his intention to soon 'make public the details of my entire journey, together with the sketches and photographs I was able to obtain.'[1180] The President, Markham, congratulated Harris for the interesting paper and fine illustrations: 'the best I have seen since I have had the honour of presiding here'.[1181] Harris had given an account 'of the whole of this land such as we have never received in this room before.' In relating 'the chief peaks of the Atlas and the picturesque valleys and gorges' Harris said 'that the scenery was ugly,' but Markham, bombastically, stated that 'it will be the opinion of this meeting that the pictures belie that description. More magnificent and picturesque scenery I never saw.'[1182] It was therefore in the geographical projections space that definitions of terms

[1177] Bishop, Gordon, Conway, Curzon and Dunmore, 399.
[1178] The Earl of Dunmore, Journeyings in the Pamirs and central Asia, *The GJ* 2 (5), (Nov., 1893), 401.
[1179] W. B. Harris, A journey to Tafilet, *The GJ* 5 (4), (Apr., 1895), 329.
[1180] Harris, A journey to Tafilet, 335.
[1181] Harris, A journey to Tafilet, 336.
[1182] E. Ommanney, A journey to Tafilet: Discussion, *The GJ* 5 (4), (Apr., 1895), 336.

such as ‘picturesque’ were collectively discussed and defined. It was on the common ground of the picturesque that diverse interests coalesced.

Not only were landscapes deemed ‘picturesque’, but human subjects too. Projected lantern-slides formed the backdrop for discussions about different scales of human identity and the place and definition of these within geography. Such comments demonstrate the objectification of people as specimens for the purposes of science, but also their orientalisation and romanticisation as pleasurable forms of entertainment. Littledale’s 1892 lecture about his Pamir travels included comments about the human ‘picturesque’, which in this context emphasized their thrilling and sensational qualities of such landscapes.[1183] The lecture triggered a discussion about the peoples he had encountered. The way in which their faces and ‘look’ were perceived to influence their characters and disposition. For Littledale ‘The men in charge were very wild and picturesque, but with most villainous countenances, and if the face is any test as to a man's character these gentlemen were certainly murderers ready made’.[1184] Such opinions demonstrate hierarchical understandings of race and type, such as those of which Galton was a proponent.[1185] Littledale later described how ‘Soon after the head man arrived accompanied by half-a-dozen soldiers armed with sniders, very picturesque, but very dirty, and with villainous countenances.’[1186] He observed that ‘The houses were wretched, and the whole population seemed most miserably poor. They have all jet black hair, with rather an

[1183] Littledale, A journey across the Pamir from North to South, 7-8.
[1184] Littledale, A journey across the Pamir from North to South. 7.
[1185] Ryan, *Picturing Empire*, 170-3.
[1186] Littledale, A journey across the Pamir from North to South, 18.

effeminate expression, but very wild-looking eyes.' [1187] Countering Littledale's opinion, Dr. Leitner positively objectified the Wakhis and Yasinis, but still in racial terms.[1188] Leitner was 'sorry to find from Mr. Littledale's account that the Wakhis and Yasinis have so fallen off in physique, as they are a splendid race.'[1189] Leitner went on to demonstrate the development of anthropological thought and cultural comparative analysis. He quoted Col. Grombellevsky's view of the Darwa Tzayiks resemblance to the Wakhis and Yasinis, in that they were 'pure Aryans, and of exceptional beauty. The women are especially lovely, with their pale delicate faces, remarkably regular features, and wonderful eyes'.' [1190] Such comments about the 'picturesque' nature of other peoples reveal how RGS Fellows objectified the world in relation to artistic pictures and styles to which they had been previously exposed. It demonstrates the projection of a notionally scientific racial hierarchy on to the new peoples and places coming to light via travel and photography. Such notionally scientific constructs of race and culture were formulated, normalized and disseminated in the geographical projections space.[1191] There was a symbiosis between art and science; familiar art forms portrayed, disseminated and authorized scientific ideas. As such geographical projections were transformers of the geographical imaginary. In this view of human beings the production of material culture, if not art, was deemed to be elevating. However, comments such as those below about material cultures fed back into the construction of

[1187] Littledale, A journey across the Pamir from North to South.
[1188] This was Dr. Gottlieb Wilhelm Leitner (1840-1899), a Hungarian-born, but naturalized British enthnologist and linguist, who was active in the British Indian Civil Service, where he was notably involved in many educational and academic ventures in what is now Pakistan and India. http://0-www.oxforddnb.com.lib.exeter.ac.uk/view/article/51109 (accessed 21.09.2015).
[1189] Littledale, A Journey Across the Pamir from North to South, 34.
[1190] Littledale, A Journey Across the Pamir from North to South, 34-35.
[1191] Ryan, *Picturing Empire,* 146-9, 161-6 and 179-82 and Edwards, *Anthropology and Photography 1860 -1920*.

geographically-specific vertical hierarchies of humans. Leitner supplied evidence in order to back up this statement in support of the moral goodness, and 'civilized' rather than 'barbaric' nature, of the Datwa Tzayiks on the basis of their favourable 'pure Aryan' looks, stating that 'To show that the people are not such very great barbarians I have some articles of their own manufacture to show you (textiles, horn-carving &c.).'[1192] Thus the greater uptake of photography in the field, and showing of lantern-slides in lectures, did not signal the end of the RGS's earlier knowledge evidencing practices with objects. Photographic evidence therefore still had limits.

Even after the adoption of the lantern speakers often veered into picturesque and poetic descriptions. For example, the young Curzon (1859 – 1925) in his 1889 lecture on the 'Transcaspian Railway' not only sought to orientalise and romanticise the regions he had travelled through; he also showed an awareness of the changing physical and social landscapes in the Pamirs through imperial influence and globalization.[1193] He resorted to the rhetorical device of pathos to eloquently express his regrets about this. Speaking of the 'old time in Central Asia' which he called 'the Thousand and one Nights, with its strange mixture of savagery and splendour, of coma and excitement', he explained that this was fading away fast and that soon 'original exploration' would no longer be feasible 'in a region that has yielded up all its secrets to science.'[1194] This view of science as being a measurable, finite and achievable task suggests the faith in a positivist, empirical and objective science of geography. But for Curzon that time had

[1192] St. George Littledale, A Journey Across the Pamir from North to South, *GJ*, (Jan.1892), 34.
[1193] This is particularly interesting in light of his later support of projects to conserve cultural heritage in the UK and India.
[1194] G. Curzon, The Transcaspian railway, *Proceedings of the RGS,* New Monthly Series 11 (5), (1889), 273-295.

not yet come; he assured his audience, heightening his lecture's promise, that 'the new order of things is so new, and its immediate effects are so astonishing, that a narrative of the still incomplete transition may awaken interest.'[1195] Curzon's intuition of change, understood as technological and social modernisation, relates to the wider concern of RGS Fellows about recording notionally primitive tribes. The romantic assertions of Thoreau that scientific and technological modernity would expose the perceived enchanting mystery of nature, as seen in Chapter 2, are also brought to mind.[1196]

The lectures and audiences comments discussed above evidence the legacy of Edward Burnett Tylor's notion of 'survivals', objects, traits or peoples that were taken as exemplars of a bygone era within a dynamic evolutionary frame, and of his influential 'Primitive culture' on the Fellowship.[1197] This was one aspect of a broader phenomenon in which 'nature' and 'primitive' peoples engendered both fear and fascination.[1198] However, the comments suggest that as well as humans and material artifacts, topographical landscapes were also categorized within a hierarchized comparative sliding scale bracketed between the poles of what was then deemed to be the primitive and progressive by some associated with the Society. Not only does such a view suggest the imbrication of the interacting plains of the human and natural, with the perceived qualities of each informing the other. It also points to the materiality of landscapes and their production by human hands. The nascent 'new' academic discipline of geography then emerged thanks to the medium of photography and the

[1195] Curzon, The Transcaspian railway, 273.
[1196] Zajonc, *Catching The Light The Entwined History of Light and Mind*, 158-9
[1197] R. Ackerman, *J. G. Frazer and The Cambridge Ritualists,* 36-39; Herbert, *Victorian Relativity, Radical Thought and Scientific Discovery,* 184-5.
[1198] Ashley, *Out Of This World,* 112.

lantern, but its emergence at a time of technical, material and social transformation between Britain and the world via an expanding British Empire and other geopolitical change is, as Ryan showed, critical.[1199]

The sections above argue that the lantern became the tool via which the reformers, or the 'doctrinaires,' demonstrated through visual evidence and in propagandizing fashion, their desired vision to redistribute the Society's energies and finances towards the fields of education and science.[1200] However, throughout this early period of lantern use the lantern's mediation of the Society's earlier tradition of communicating via visual and verbal 'picturesque' imagery is apparent. As Hewitt has shown the interplay of the visual and verbal in lectures needs to be approached on a case by case basis.[1201] Indeed he asserted that:

> The multiplicity of illustrative modes suggests the complexities of the visual economies of the Victorian lecture theatre, the ways in which scientific subjects and technological displays operated no more than as one resource amongst many, and the extent to which to fully comprehend the lecture's spectacle of words we must cast the net more widely and reconsider the role of language itself in the construction of platform spectacle.[1202]

It is also evident that despite the more frequent incorporation of the lantern in lectures, verbal rhetoric remained a significant factor in the making knowledge and reputations. The notional topographical aesthetics that were

[1199] Ryan, *Picturing Empire*.
[1200] C. Markham, Manuscript record of The Geographical Society, c.1900 with additions up to 1910, 422.
[1201] M. Hewitt, *Beyond Scientific Spectacle: Image and Word In Nineteenth-Century Popular Lecturing*, 79-95 in Kember. Plunkett and Sullivan (Eds), Popular exhibitions, *Science and Showmanship, 1840-1910.*
[1202] Hewitt, *Beyond Scientific Spectacle*, 88 in Kember, Plunkett and Sullivan, *Popular exhibitions, Science and Showmanship, 1840-1910.*

perceived on travels was not only projected in photographic lantern-slide form, but also verbally projected on to images in lectures.

The gradual synthesis of knowledge forms, scales and visions of spaces inherent in the process of illustrating scientific papers delivered in the geographical projections space by a greater number of lantern-slides, described above, transformed knowledge presenting and reception and inaugurated 'synchronised lecture entertainments'. [1203] The lantern engendered shifts in communication practices; previously the lecture performances were largely concerned with cartographic, textual and rhetorical modes of inscription and communication. The lantern changed the focus of the RGS visual and verbal lecture performances in its graphic communication of the subject matter, through a greater number of cartographic, hand-drawn and photographic images. The synthesis of visual and verbal knowledge communicated and of visual and aural knowledge received by audiences was quite distinct from the earlier style of lecture in which a speaker stood before a large wall map on which another person pointed out the relevant locations.[1204] In conjunction with the wider uptake of photography, the projection of lantern-slides conspired to transform the Society's lectures. This may have encouraged, if not obliged, audiences to consider maps and their relationship to human figurative subjects further during lectures. The lantern-slide lectures evidence the significant force exerted by images in disseminating secular evolutionary theory and the projection of this theory on to geographical subjects, that is

[1203] Dixon, Photography, early cinema, and colonial modernity.
[1204] Mill, *The Record*; Kember, *Marketing Modernity.*

to say, peoples, places and material cultures around the world.[1205] Visual and textual representations of the picturesque were adapted to evolutionary theory was projected across conceptions of space and time.

Propagandizing methods of geographical science c.1887 – 1894

The former glimpses of Freshfield's character have revealed how he was instrumental in gaining acceptance for the lantern. By harnessing lantern-slide projections he successfully articulated the aesthetic pleasures of travel and travels by proxy through the medium. This section presents a further instance of inverted perspective by demonstrating how Freshfield was equally significant in promoting positive empiricist methods via the medium and as the 'travelling landscape-objects' of lantern-slides were, from 1888, taken up in the RGS's geographical projections spaces more frequently.[1206] I analyse the use of the lantern and lantern-slides in the demonstration of scientific methods of knowledge gathering in the field and of knowledge communication. I argue that notionally scientific methods of knowledge making and presentation were over-vigorously promoted in lectures. The focus on lantern technology in the making of geographical knowledge and science enables the examination of lantern uses and effects in the Evening meetings between 1886 to 1894. Further references to the role of images make explicit the perceived advantage of the practice. Yet instances where geography expressed through verbal rhetoric were seen as inferior and viewed with mistrust are also assessed. Therefore we see the emergence

[1205] Ryan, *Picturing Empire*; J. Smith, *Charles Darwin and Victorian Visual Culture*, Cambridge University Press, 2009; P. Prodger, *Darwin's Camera Art And Photography In The Theory of Evolution*, Oxford University Press, 2009.
[1206] della Dora, Inverting perspective, 334; della Dora, Travelling landscape-objects, 335.

of a new pictorial language of geography that was expressed visually and verbally.

Rose observed that critical effects followed from the harnessing of visual technologies by geographers.[1207] The use of lantern-slides was, undoubtedly, 'effective', a view echoed recently by Edwards, who privileged the concept of effect over that of agency.[1208] The lantern also transformed the visual aspects of the RGS meeting experience. Prior to the lantern's adoption the Fellowship was smaller, more exclusive and less diverse since, as Stoddart demonstrated, most Fellows came from a naval background.[1209] Yet despite the lack of permanent architectural base and a somewhat peripatetic existence the Fellowship thrived, in part, thanks to the strong leadership of Sir Roderick Murchison. However, the intellectual, experiential and emotional culture, and intimacy, shared by the Fellowship of an earlier era was transformed less by the RGS's settling at the 1 Savile Row house. More significant in engendering transformation was the advent of photographic and non-photographic images displayed via the lantern, and considerably more by the diversifying ways in which these images were interpreted. These two factors led to new and widening fields, scales and definitions of geography. The display of such images drew more diverse audiences to lectures. Mindful of this, I consider further examples of the harnessing of lantern-slides for the purposes of instruction and scientific methods of evidencing.

Lantern-slides were projected to demonstrate and promote the empirical, inductive and comparative methods of analysis that became

[1207] Rose, On the need to ask how, exactly, is geography 'visual'?', 218.
[1208] E. Edwards, Key Note lecture, Anthropology and Photography: A Long History of Knowledge and Affect, Anthropology and Photography conference, Royal Anthropological Institute and British Museum, 29-31.05. 2014.
[1209] Stoddart, The RGS and the 'New Geography', 191.

normalized, across the nineteenth-century. Although partly institutionally-mediated, the transcendental perception of the imagination remained vital to these methods.[1210] Freshfield, after 1886, pointedly drew attention to lectures and papers that demonstrated scientific methodology and sought to evidence new facts rather than focusing on the personal narrative. Projections were harnessed in such demonstrations of scientific methodologies. This was a conscious strategy of the reform movement to rebalance, or correct, the older style of paper and subjective travel accounts. The late 1880s saw an emphasis upon producing knowledge in the field to a certain standard in order to integrate it into a widening scheme of science. The concept of the chiastic journey of field-work, conceived by Lévi-Strauss, was thus formed within the geographical projections space both before and after travel.[1211] The lantern-slide lecture performance elided in the manner of the bi-partite chiasma with the foreign field.

The foregoing assertions are demonstrated by the projection of slides and a number of other experimental changes to knowledge communication practices. Mr. Delmar Morgan, a Library and Map Committee member, proposed in 1885 that small maps be prepared for distribution at the Evening meetings.[1212] The resolution was passed and the maps were printed on stiff white paper and the name of the RGS was inserted on to the face of the map.[1213] Later, once the lantern regularly featured in meetings, a large general diagram map was displayed next to

[1210] Golinski, *Making Natural Knowledge, 49-51 and 54-55; Herbert, Culture and Anomie,* 10, 14 and 257.
[1211] Wiseman, *Lévi-Strauss, Anthropology and Aesthetics*, [2007], 2009.
[1212] RGS Committee Minute Books, Library and map committee special meeting minutes, 2nd December, 1885. (although hand maps had in fact first been used in November 1885 before Delmar Morgan actually officially proposed them (Herbert, F. private communication).
[1213] RGS Committee Minute Books, Library and Map Committee, December 2, 1885: 131 – 132.

the screen for projections.[1214] Yet 'the general diagram was not much use on account of the room having to be darkened for the slides of views, and for the same reason it was impossible to follow the hand-maps while the paper was being read.' [1215] He saw the transition to lantern-slide maps as a great improvement. By 1896 the hand-maps had superseded the large hanging diagrams and wall maps. This provoked concern on the part of John Coles, the Map Curator, because of gaps in the Society's diagram collection, which must have continued to be in demand. [1216] These perspectives support the argument that after the first instance of lantern-slide use, there was 'a transition period' in meeting practices.

Arguably, this brief assessment of hand-maps might justify the reasoning that were two phases in the lantern transition since the Society took longer to transit to projected maps. This phase can be dated to approximately 1886 to 1896. Additionally, and countering Crary and Clark and Doel's argument, three-dimensionality was not the preserve of the stereoscope. [1217] The parallax of stereoscopic vision was thus neither metaphorically nor materially absent from the RGS lantern-slide lectures. RGS lectures were multimedia performances. The hand-maps situated the visual and verbal narratives presented and, in the manner of parallax, the words and images on the screen and on the printed sheet came together to form a complete single picture or sequence of pictures.

In this context of changing methods of knowledge presentation Freshfield's voice was frequently heard in post-lecture discussions between 1886 and 1894. As the catalyst to the founding of the Society's Photograph

[1214] Reeves, *Recollections of A Geographer*, 36.
[1215] Reeves, *Recollections of A Geographer.* 36.
[1216] RGS Committee Minute Books, Library and Map Committee, May 20 1896, 335-6.
[1217] Crary, *Techniques of the observer,* 1991; Clark and Doel, Engineering space and time: moving pictures and motionless trips, 53-54.

Collection in 1884,[1218] which aimed to systematize and order photographs, he assiduously championed both photography and lantern-slides in manifold forceful, rather than subtle, ways. For example, he 'regretted very much that, owing to the non-arrival of the photographs that Lieut. Seton-Karr expected, he had been unable to illustrate his paper with the lantern.' [1219] Future mountain travellers, Freshfield hoped, would take 'photographic machines' with them and make good use of them. This was easy to do; 'He had himself carried Mr. Donkin's camera nearly up Mont Blanc, and everyone knew what superb plates Mr. Donkin produced'.[1220] Thus Stoddart's claim that Freshfield has 'no pretensions to science' is overturned.[1221] Freshfield, although garnering the animosity of a section of the Fellowship in championing analysis and evidencing, contributed towards reclaiming a scientific reputation for the RGS.

In the 1889 '*Further Explorations in the Caucasus'* papers by A. F. Mummery, et al., the third paper, 'Notes on The Last Journey and Photographs of Mr. W. F. Donkin' by C.T. Dent, constituted an early example of a visual and historical geography.[1222] By contextualizing surviving photographs developed from the negatives in Donkin's camera and with the textual evidence in Harry Fox's diary, C.T. Dent reconstructed Donkin's photographic decision-making process,[1223] and the emotional

[1218] 'It was only in 1884 that a beginning was made, at the instance of Mr. Freshfield, in forming a collection of photographs, and three years later of slides; now the catalogues of photographs and slides amount to upwards of 40,000.' Keltie, Thirty years work of the RGS, 358.
[1219] H.W. Seton-Karr, The Alpine regions of Alaska, *Proceedings of the RGS, New Monthly Series* 9 (5), (May, 1887), 284.
[1220] Seton-Karr, The Alpine regions of Alaska, 284.
[1221] Stoddart, The RGS and the 'New Geography', 199.
[1222] C. T. Dent, *Notes on The Last Journey and Photographs of Mr. W.F. Donkin in* A. F. Mummery, H. W. Holder, W. F. Donkin and C. T. Dent, Further explorations in the Caucasus, (Jun. 1889), 367 – 369.
[1223] Mummery, Holder, Donkin and Dent, Further explorations in the Caucasus, 367.

reactions to scenery and the spirit in which he practiced photography.[1224] A sort of negative photographic history of the expedition was described in the paper, as Fox's diary mentioned the point when Donkin had changed a reel of negatives, containing views subsequently lost when he fell to his death. This process of historical analysis also demonstrated a desire to portray Donkin not merely as a technician or artist, but as a rational man making significant contributions to geographical science and understandings of barely mapped regions.[1225] Thus Donkin and Fox were heroised and their work celebrated, not as that produced on a failed and fatal expedition, but as that of men of judgment and ability. Donkin's photography was lauded since he 'seldom failed to turn even a mountaineering failure to some topographical account and he secured a very valuable series of views from the highest point reached.'[1226]

The evidencing powers of photography were brought to the audience's attention via the lantern in order to elucidate 'unworked out topography'.[1227] The 'many unsolved questions of physical geography' could be elucidated by comparing existing, often partial and deficient maps, with the knowledge and evidence in photographic form brought back by mountaineers and turned to 'geographical account'.[1228] A new visual literacy was emerging amongst geographers. In 1891 the President, Grant Duff (1889 – 1893), expressed his gratitude to the traveller, Littledale, whose paper accompanied by forty lantern-slides, had 'brought the Pamir

[1224] Dent relied on the personal diary of fellow expedition member Harry Fox (Mummery, Holder, Donkin and Dent, Further explorations in the Caucasus, 367).
[1225] Mummery, Holder, Donkin and Dent, Further explorations in the Caucasus, 367.
[1226] Mummery, Holder, Donkin and Dent, Further explorations in the Caucasus, 368.
[1227] Mummery, Holder, Donkin and Dent, Further explorations in the Caucasus, 368.
[1228] Mummery, Holder, Donkin and Dent, Further explorations in the Caucasus, 368.

from the region of poetry down to the region of reality.'[1229] Such tantalizing glimpses of the far-off unknown must have been the impetus for audiences to explore these increasingly few regions not yet cartographically surveyed or mapped.

A year later, Grant Duff ardently thanked Ernest Gedge, Esq. for his paper on a navy-led expedition. The President acknowledged the speaker's 'scientifically interesting photographs'.[1230] Just a few years later Colonel Godwin-Austin ventured that the Mustagh region was so 'desolate' that the appearance could 'not be described in words' and it was precisely Conway's photographs that conveyed any the country's vastness.[1231] Later in January 1894 Clements Markham thanked Mr and Mrs Bent, for their account of their expedition to the Hadramut. He stressed how the paper, sketches and photographs *together* (my emphasis) had provided 'a very clear idea of the country […] almost unknown to him and the audience…a most romantic country of which we have only before heard rumours'.[1232]

Such examples show photography's incremental take up at the RGS, and conversely that the Fellowship did not take to photography alone; the Council promoted it over several years, and quite deliberately. The Evening lectures became the space in which photography was propagandized to the Fellowship. The energies of historical geographers have largely been devoted to studying the RGS's promotion of global exploration. In addition, the exploration of a notional foreign field has been understood by scholars

[1229] St. George Littledale, A Journey Across the Pamir from North to South, (January, 1892), 35.
[1230] Read at the Evening Meeting, April 11th, 1892. A Recent Exploration under Captain F.G. Dundas R,.N., up the River Talla to Mount Kenia) (Slide set 138).
[1231] Paper read at the RGS, May 8th, 1893 by W. M. Conway. The quoted comments are from Colonel Godwin-Austen, M. Biddulph and D. Freshfield Exploration in the Mustagh Mountains: discussion, *The GJ* 2 (4), (Oct., 1893), 300.
[1232] J. T. Bent, Expedition to the Hadramut, 332. (Set 87. 29 slides made. All d.f. 02/02/51 Photos throughout the *GJ*). Though the lecture was co-produced by the couple, only Theodore Bent was credited as the author.

'as a process of physical and material contact and exchange' that played an important role in the construction of geographical knowledge through a range of practices of observation, measurement and recording.[1233] In light of the evidence presented above the geographical projections space can be seen as one in which visual and verbal expressions of this chiastic exchange took place between diverse interest groups, notably practitioners of science and less scientifically-savant audiences.[1234]

A further feature of the geographical projections space was rhetoric. As discussed in Chapter 2, an array of studies by historians have covered this ground.[1235] Historical geographers drew from Nelson's allusion to the role of rhetoric in understanding art history lantern-slide lectures. This applies equally to geography and the RGS's historical lantern-slide practices. A lecturer, by adopting lantern-slides, 'gains legitimacy through the cogency of her arguments, the acquiescence of the audience, and the performative frame that enables her to mold the audience's vision.'[1236]

Although the chapters above have argued that visual evidence such as lantern-slide projections was indicative of empiricist scientific methods it is important not to overlook the continuing significance of earlier truth regimes. Discussions concerning the place of trust in the production and the dissemination of knowledge have centred variously around human

[1233] Naylor and Ryan (Eds), *New Spaces of Exploration,* 5. See also Collier and Inkpen, The RGS, Exploration and Empire and the Contested Nature of Surveying, 273-283; Withers, Mapping the Niger, 1798-1832, 170-193; Ryan, Photography, visual revolutions and Victorian geography in Livingstone and Withers (Eds), *Geography and Revolution,* 199-238; Withers, Science, scientific instruments and questions of method in nineteenth-century British geography, 167–179.
[1234] Strecker, I. and S. Tyler (Eds), Culture and Rhetoric, Studies in Rhetoric and Culture Vol. 1; Wiseman B. and A. Paul (Eds), *Chiasmus and Culture,* Studies in Rhetoric and Culture Vol. 6, 2014, 252; Wiseman, *Lévi-Strauss, Anthropology and Aesthetics*.
[1235] Livingstone, Text, talk and testimony, 93–100; Finnegan, Natural history societies in late Victorian Scotland and the pursuit of local civic science, 53–72; Finnegan, Exeter-Hall science and evangelical rhetoric in mid-Victorian Britain, 46-64; Finnegan, Geographies of scientific speech in mid-Victorian Edinburgh in Livingstone and Withers (Eds), *Geographies of Nineteenth-Century Science*, 153-177.
[1236]Nelson, The slide lecture, 415-418 in Ryan, Who's afraid of visual culture?, 234.

testimonies and the harnessing of instruments to demonstrate notional facts.[1237] However the way in which empirical knowledge was processed and legitimized was dependent not only upon the social constitution of trust, but also upon its material formalization and inscription in space, and the perceived values of these. It has been stated that 'The capacity of scientists to know what they do about the world is conditional upon finding means to bring distant things near'.[1238] The active role of audiences in formulating trust and knowledge is still being charted by scholars. Indeed Lightman discussed some of the criticism and snobbery that non-expert audiences of science faced towards the end of the nineteenth century, notably in relation to the Royal Institution audiences, described by one critic writing for the *Saturday Review* in 1875 as 'scatter-brained auditors'.[1239]

The legitimacy of observations made in the field, and of the observer, were defined by perceived gender, class and ethnicity signals.[1240] For example, although endorsed by the RGS President, Murchison, Du Chaillu's findings, collections and publications were equally regarded suspiciously by certain sectors of scientific London, notably by Grey of the Zoological Society, and his ability to produce authentic knowledge questioned on the basis of race and linguistic ability.[1241] The botanist Sir Joseph Hooker famously pronounced in 1864 that the RGS dealt in 'claptrap and flattery and flummery'.[1242] The uncertain status of the RGS in the mid-nineteenth century is informed by Driver's work on the frosty reception by the RGS of

[1237] Shapin and Schaffer, *Leviathan And The Air-Pump;* S. Shapin, Placing the view from nowhere, 7.
[1238] Shapin, Placing the view from nowhere, 8.
[1239] Lightman, *Victorian Popularizers Of Science.*
[1240] Driver, *Geography Militant,* 54.
[1241] S. McCook, "It May Be Truth, but It Is Not Evidence": Paul du Chaillu and the legitimation of evidence in the field sciences, *Osiris* 11, Science in the Field (1996), 177-197.
[1242] Joseph Hooker (1864) quoted in Livingstone, *The Geographical Tradition,* 160.

the journalist Stanley's 'finding' of David Livingstone and the Society's snubbing of Stanley on the basis of his perceived dubious profession and social origins are well known.[1243] Stanley was by no means alone in suffering this fate.[1244] The legitimacy of knowledge was also dependent upon the rhetorical fluency of speakers and their ability to carry diverse audiences.

Material objects and forms of evidence were subject to the same regimes of trust. The authority of photography acted in conjunction with other forms of power, social standing and shared social maps of 'trustworthy practice.'[1245] When images made by other people were projected in lectures, generally, the photographers' work was credited and acknowledged. Trustworthiness in the photographer and their images was founded on social standing as much as the veracity, genre and quality of their images. However, the lecturers took the lion's share of the glory during the lecture and in print subsequently. It is therefore possible that the quality of the images and words did not match each other. Thus despite the promotion of numerous visual practices, especially photography, in evidencing and instruction, hierarchies of geographical knowledge forms persisted. Moreover, the selection of images accompanying the paper of another person theoretically required a detailed knowledge of the photograph and lantern-slide collections and an efficient cataloguing system. Understanding the science and geographical processes discussed was vital in the selection of images.

[1243] F. Driver, Henry Morton Stanley and His Critics: Geography, Exploration and Empire, *Past and Present,* No. 133, 1991, 134-166 and Driver, *Geography Militant*; Driver, Distance and disturbance, 76.

[1244] Hooker (1864) quoted in Livingstone, *The Geographical Tradition,* 160.

[1245] J. Tucker, Photography as witness, detective, and impostor: Visual representation in Victorian science in B. Lightman (Ed) *Victorian Science In Context,* 389 in Ryan, Photography, visual revolutions and Victorian geography, 222.

Despite frequent displays of photographic lantern-slides and a new style of presenting more technical, or scientific information, the authority of images continued, at times, to be perceived as dubious. This is signaled by comments such as those made at the end of Curzon's *The Transcaspian Railway* lecture, delivered at the Evening Meeting, March 1889..[1246] Curzon apologized for the inclusion of scientific and factual information within the lecture and '[…] these technical details, which I fear may have wearied many of my hearers'.[1247] He then flagged up the fact that lantern-slides were to be displayed during, as opposed to after, the lecture with the following 'I now pass to a record of my journey in bringing which before you I shall be greatly assisted by the lantern slides which have been prepared from photographs, and by the excellent map which we owe to the skillful hand of Mr. Sharbau.'[1248] Here Images and words were therefore still not yet fully synchronized.

In the post-lecture discussion, a fellow MP Sir Richard Temple,[1249] praised Curzon, predominantly for his rhetorical skills, and ventured 'that never in this Hall had a lecture been more effectively delivered or illustrated.'[1250] Temple personally endorsed Curzon by vouching for the 'extraordinarily accurate' paper and Curzon's 'authority'. Because Curzon had provided an accurate description of regions Temple knew, he concluded 'that his authority is to be accepted regarding these localities, which he (*Sir Richard*) was necessarily acquainted with every inch of that ground, he, and probably all those present, had not had the privilege of

[1246] RGS-IBG lantern-slide set 104. 6 lantern-slides remain.
[1247] G. Curzon, The Transcaspian railway *Proceedings of the RGS*, New Monthly Series 11 (5), (May, 1889), 280.
[1248] Curzon, The Transcaspian railway, 280.
[1249] Temple had trained at the East India Company College, served in the Punjab, just south east of the area Curzon had travelled in, and been involved in the Afghan war of 1878-80.
[1250] Curzon, The Transcaspian railway, 294.

seeing.'[1251] This old-fashioned form of personal endorsement signaled the power of the armchair geography lobby, for Temple clearly stated that he himself had not visited all the areas described, thus rendering his approbation somewhat redundant. It also illuminates the power of personal political networks of which Curzon, as a young conservative party MP, was then a part. The social construction of geographical knowledge in and around these networks awaits further investigation. The comments echoed, if not lend confirmation to, Hooker's accusation, cited above.[1252] They support Freshfield's comment in *Quips for Cranks* that the discussions had become exercises in egotistical display in which speakers, instead of contributing useful points, often drew attention to their own exploits and ill-informed opinions.[1253] Temple's comments may therefore be understood within the Classical model of patronage and way for the older man to claim a share of the younger's glory. Nevertheless, Temple demonstrated doubt regarding the use of picturesque images within the lecture.Images and words did not systematically operate in tandem, but did, at times, contradict or undermine one another. It is precisely the use of the lantern-slides which may have prompted him to endorse Curzon's rhetorical ability. Stating that 'the lecture, picturesque as it was, must be reliable in its topographical and geographical information,' Temple elucidated that it was precisely the use of attractive images that might cast doubt on the veracity of the facts related. [1254] Lantern-slides were then not understood as instruments of evidencing by all at the RGS.

Freshfield, in particular, rigorously reinforced practices of analysis,

[1251] Curzon, The Transcaspian railway, 294.
[1252] Joseph Hooker, 1864 quoted in Livingstone, *The Geographical Tradition,* 160.
[1253] RGS Additional papers 11, Freshfield, D. Draft of 'Quips for Cranks', [1924], 45-48.
[1254] Curzon, The Transcaspian Railway, 294.

criticism and synthesis in the Evening lectures. Of all the Society's Officers, he was most vociferous in discussions. As the driving force behind so many innovations in the RGS visual and knowledge making practices in the 1880s, he may have intentionally set out to demonstrate and to raise the scientific standard of geography in meetings. This practice may not have been to the liking of all Fellows. By 1894, before the instigation of separate Technical meetings, as I show below, an emphasis on keeping papers and discussions brief became apparent. Markham referred to the period 1886-1893 as 'the interregnum,' alluding to the British Civil war and revolution, describing it as a time in which the 'doctrinaires' were rampant.[1255] There was at this time such a marked change in the Society's affairs that Markham resigned on the grounds that 'he held strongly that a member of Council, and especially a Secretary, should always support a President with his whole heart, he could not remain in office during the presidency of Strachey and his successor.' [1256] Chapter 9 demonstrates a foundation to Markham's claim that the 'doctrinaire' policy decried that 'there was no longer any occasion for expeditions on a large scale, to stave all exploring work, and to subsidize educational schemes'.[1257]

Lantern use for the purposes of commercial propagandizing has been broached in wider lantern studies.[1258] Ryan and Plosjazka focused on its use in imperialist propaganda.[1259] Driver referred to more general lantern use 'as vehicles for political agitation, missionary propaganda or popular

[1255] RGS Clements Markham, manuscript record of The Geographical Society, c.1900 with additions up to 1910, 449.
[1256] Mill, *The Record,* 135.
[1257] RGS Clements Markham, manuscript record of The Geographical Society, c.1900 with additions up to 1910, page 449.
[1258] P. Gillies, Slides for advertising and propaganda, in Crangle, Heard and van Dooren (Eds), *Realms of Light,* 195-202.
[1259] Ryan, *Picturing Empire*; Plosjazka, *Geographical Education, Empire and Citizenship, 1870-1944.*

entertainment' and pointed out that this impacted upon the ways in which 'geographers could and did respond to the use of slides in an educational context.'[1260] However, the RGS also became a site for the propagandizing of new methods of knowledge production and communication. The geographical projections space soon became the locus of instruction and, at times, propagandizing of practices of science to RGS audiences. In 1891 Freshfield again set out to be didactic by showing audiences *how* to think, and how to see, rather than what to see, or what to think. His comments, analysis and synthesis of the descriptions and, significantly, photographs made by the husband and wife team that were Mr and Mrs Littledale evidence this. Freshfield introduced the Littledale's *A Journey across Central Asia* paper. Although Littledale was present at the meeting, for some reason Freshfield was assigned to read the paper. He proffered a typology of the mountain types encountered by the travellers by referencing the lantern-slide projections, explaining that the 'numerous photographs taken by Mr. Littledale exhibit a characteristic type of landscape: - tent-shaped, glacier-coated mountains divided by broad easy gaps; bare heights naked of verdure and shorn of forests by the bitter winds and frosts; desolate lakes; a region where for the most part there is neither fuel nor fodder; an Engadine of Asia, with nine months winter and three months cold weather; the home of the wild sheep, the summer haunt of a few wandering shepherds; nomads' land if not no man's land'.[1261] This suggests the limits of verbal language and terms in accurately describing geographical

[1260] Driver, On Geography as a Visual Discipline, 229. See also F. Cullen Marketing national sentiment: Lantern slides of evictions in late nineteenth-century Ireland. *History Workshop Journal* 54, (2002), 162–179; K. Grant, Christian critics of empire: Missionaries, lantern lectures and the Congo Reform Campaign in Britain, *Journal of Imperial and Commonwealth History* 29, (2001), 27–58.
[1261] St. George Littledale, *A Journey Across the Pamir from North to South*, Jan., 1892, 30.

phenomena. It substantiates the need for a notionally objective form of evidence such as photography that could overcome the idiosyncracies of individual perceptions, language and interpretations. However, the utility of photography and of the projection of photographic lantern-slides is also evident if we consider that amongst the changing audiences of the RGS there might have been many who not travelled. Here the utility of photography and lantern-slides was thus educational too.

Lantern-slides were instrumental in demonstrating to Fellows the utility of the comparative method in geographical thinking, observation and recording in the field, and in the making of truth-claims in lectures. This thesis informs studies of earlier periods of travel and exploration that outlined the role of displaying specimens by proxy in the assertion of truth claims.[1262] For example, Mummery overtly criticized makers of Caucasus maps and geographers who had:

> […] laid down a single chain, great geographers have asserted that the glaciers are small…Perhaps the day may yet come when it may be admitted even in text-books, that the Caucasus has parallel chains, complex ridges, enormous glaciers, and granite peaks still more formidable than those of the Alps. If it does, the knowledge will have been forced on geographers by ''mere climbers''.[1263]

Thus even in the final decades of the nineteenth century there remained dissent amongst diverse knowledge producers about the nature and lexicon of geographical features. In such instances photography was mobilized to prove and disprove claims and collectively debate what was, or was not, knowledge. Mummery suggested that the legitimacy of the Alpine Club to contradict the map-making establishment and produce knowledge had been

[1262] Driver, Distance and Disturbance, 85.
[1263] A. F. Mummery, H. W. Holder, W. F. Donkin and C. T. Dent. Further Explorations in the Caucasus. *Proceedings of the RGS,* New Monthly Series 11 (6), (Jun., 1889), 359.

questioned. He also attacked the monopoly of 'so called scientists' who deemed that what they 'know not, is not knowledge.'[1264] It was within such a context that a geography of tensions between the emergent scientific elite, 'armchair' savants such as map makers and men of the field, specifically here, of mountains, that lantern-slides were deployed at the RGS. Here we see the collective production, display and interpretation of photographs in lantern-slide form became contentious and thus important, particularly in the case of the Caucasus, where images were not just illustrative and entertaining, but evidencing, shaping of knowledge and evolving geographical materials such as maps.

Freshfield commented at length on Mummery's lecture. For him, 'Journeys such as they had heard of that evening, might be regarded as the beads of adventure that make up the necklace of science.' [1265] Such papers, he asserted, could banish 'into the background ancient error' and correct 'the leading Dictionary of Geography', which misinformed schoolboys by reporting that 'The peaks of the Caucasus are either flat or cup-shaped, the existence of glaciers is uncertain'.[1266] He also explained why the speakers 'had not dwelt in any detail […] on intricate points of orography and hypsometry, such as the relative positions and heights of the peaks of the central group, which their climbs had done much to clear up.'[1267] This, he intimated, was because '[…] before a large audience it was seldom expedient to dwell in detail on such matters […]' These matters of scientific interest such a geological analysis of specimens, he assured, would appear in the *Proceedings*. He drew attention to the fact that the

[1264] Mummery, Holder, Donkin and Dent, Further explorations, 359.
[1265] Mummery, Holder, Donkin and Dent, Further explorations, 370.
[1266] Mummery, Holder, Donkin and Dent, Further explorations, 370.
[1267] Mummery, Holder, Donkin and Dent, Further explorations, 370.

sketch-map of the expedition inspired queries on his part, but that he would refrain from comment.

Freshfield's comments and the papers chosen exemplify how even amateurs travelling for leisure and amusement were seen as potential scientifically useful sources. It became the deliberate policy of the Society to highlight travellers' ability, most notably by producing photographs. However, the push in discussions, foremost from Freshfield, to promote science and scientific methodology by providing visual evidence, to substantiate truth claims, may have been too heavily and frequently accentuated, thereby riling parts of the Fellowship.[1268]

The value of accurate measurement in geographical knowledge production was argued for in post-lantern slide lecture discussions. Freshfield was masterful in summarizing lectures. He was quick to contextualize travellers' findings within the wider stock of geographical knowledge. His ability to see the bigger picture of what had previously been achieved and what was yet to be undertaken is exemplified in the discussion that following William Conway's 1893 *Exploration in the Mustagh Mountains* paper. Freshfield ventured that 'we have perhaps lost sight of two main facts. First, Mr. Conway has been the first person to cross the greatest glacier pass that exists in the temperate regions of the world. Next, Mr. Conway has, with only one exception (Mr. Graham), and that not absolutely certain, reached the greatest height of anyone on this globe.'[1269] Freshfied endorsed the scientific recording undertaken during the expedition, notably but not only with the camera. 'Mr. Conway', he stated, 'has measured his height, taken photographs and observations of several

[1268] 'Glacial Bores: A Student's Song', Draft of *Quips for Cranks*, page 11, RGS/AP11, Freshfield, D. [1924].
[1269] W. M. Conway, Exploration in the Mustagh Mountains, *The GJ* 2 (4), (1893), 302.

kinds at the top. To that I attach most importance of all.'[1270] Finally, Freshfield offered a backhanded criticism in stating that he was certain that 'the Geographical Society have sent out few travellers who have brought back more fruitful results.' [1271]

This phase of the Society's lantern-slide lectures in which Freshfield militantly promoted scientific methods of evidencing and analysis, actively contributed to the discontent that fuelled the well-known debate about the admission of women to the RGS in 1892-93.[1272] The science and methods, so assiduously propagandized by Freshfield, left little room for personal anecdote, impressionistic reminiscing and the 'numinous' pleasures of escapism, virtual travel and the exotic that drew audiences to the Society's meetings. [1273] If Freshfield's efforts to progress geography, promote photography and analysis did not quite result in disenchantment or unweaving of the rainbow, as seen in Chapter 2, they nevertheless alienated parts of the Fellowship. In this scenario it is clear that the technology of the lantern alone did not jeopardize the precarious geographical science, but rather that perceptions of it, and particular instance of its use in conjunction with the spoken word played as much a part in this process.

Amongst the many lectures in which the important function of lantern-slides in evidencing is visible, is that of the RGS librarian, H. R. Mill's 'Survey of the English Lakes' 1894 paper. This lecture exemplifies the scientific methodology and comparative, historical and international analysis

[1270] Conway, Exploration in the Mustagh Mountains, 302.
[1271] Conway, Exploration in the Mustagh Mountains, 302. The RGS once held two sets of lantern slides, apparently associated with this lecture (sets 370 and 371). The slides numbered 170, but were destroyed due to fading in the 1950s.
[1272] Madrell, *Complex Locations*; Bell and McEwan, The admission of women fellows to the Royal Geographical Society, 1892-1914, 295-312.
[1273] della Dora, Inverting perspective, 335.

that some within the RGS sought to promote. The *GJ* only carried an abstract of the meeting, but the paper was both illustrated by 'a series of special photographs of the Lake District, and numerous maps and diagrams projected by the lantern.'[1274] The ante-room hosted a display of Mr. J.E. Marr's historical maps of the Lake District some of which were French and Swiss made. Mill argued the case for flat plain lake beds. The visual evidence exhibited allowed for discussion of a variety of lake bed forms and their processes of formation:

> Now, such a type of lake would be appropriate if the lake has been excavated by glacial action. Nevertheless, we find the contours from above the surface of the lake are carried down underneath the surface, as you have seen more than once in the photographs, also in some of the maps in the next room.[1275]

Freshfield showered praise upon the Society's heads of departments by adding that the work they had carried out over the last fifteen years at the Society and in their free time had contributed 'to promoting the interests of the Society, and spreading the science it ought to represent throughout the country.'[1276]

Mill's lecture, and Freshfield's earlier actions, were the catalyst for the creation of a separate series of Technical meetings from November 1894, at a time when the Society was still unsettled following the debate abut the admission of women. The creation of the separate series of lectures would undoubtedly benefit from further contextualization in relation to the Society's educational schemes, discussed in Chapter 9, as well as Halford Mackinder's ambitions for the discipline.

This constitutes a further instance of how lantern-slides conform to

[1274] Mill, A survey of the English lakes, *The GJ* 4 (3), (Sep., 1894), 240.
[1275] Mill, A Survey of the English Lakes, 241.
[1276] Mill, A Survey of the English Lakes, 244.

the theory of 'travelling landscape-objects' as circulating place, by metamorphosizing and opening up spaces.[1277] Though here the extension of space in one location, that of the Technical meetings, engendered its retraction elsewhere. For della Dora 'Landscape-objects […] are magic, self-enclosed microcosms.' Here she draws on Susan Stewart's understanding that 'the miniature offers a world clearly limited in space but frozen and thereby both particularized and generalized in time'.[1278] The projection process questions notions of 'frozen' images; lantern-slides were not designed to be static. Historically, lantern-slides whether as individual slides or sets of slides, were anything but self-enclosed microcosms. Yet a case for lantern-slide use in carving out a place for scientific practices that sought to generalize and particularize mechanical processes of nature can be made. Additionally, their value resided in the process of projection and exhibition in lectures. It was precisely their ambiguity as much as their certainty that was valued, and which was harnessed to 'open up the interpretive process'.[1279] In their practical usage in knowledge making lecture performances they could be used, by some such as Freshfield, to discuss and debate truth claims, thereby engendering as much doubt as certainty.

Conclusion

This chapter traced the role of the lantern and lantern-slides in geographical knowledge production and communication. I have shown the collective formation of knowledge between, and around, the spaces, speakers,

[1277] della Dora, Travelling landscape-objects, 335
[1278] S. Stewart, *On longing: narratives of miniature, the gigantic, the souvenir, the collection,* Duke University Press, 1993, 152 in della Dora, Travelling landscape-objects, 342
[1279] Rose, On the need to ask how, exactly, geography is 'visual'?, 216.

images and audiences and elucidated the lantern's use in relation to 'different sorts of authority and different sorts of lecture.'[1280] The chapter also evidences the recruitment of lantern-slide images into the service of the reformist agendas of individual RGS figures such as Freshfield, and later Curzon. The changes described above over the period 1887 to 1894 maintained the Society and geography's status as 'important and entertaining' and its scientific, political and artistic utility.[1281] Close attention was also paid to the language with which the use of the lantern and lantern-slides was communicated in subtly different ways, and in different times and locations within the organ of the society's *Proceedings*. The findings support the assertion that there was a 'transition period' of experimentation with lantern-slides and of wider changes in the RGS practices that lasted from c.1886 until 1888.[1282] The discussion of the transition period therefore provided a series of stop-motion views of the lantern-slides as they were incorporated, in the manner of 'travelling landscape-objects' into the RGS's practices.[1283] This sequence demonstrated the uncertain authority of images to validate notional truth claims and scientific knowledge.

Freshfield has hitherto been overlooked as a reformer who held ambitions to promote geography education and science who, as I showed, was critical in the Society's adoption of the lantern. Despite this, and his undeniable energy and astuteness, I show below how he himself neglected, intentionally or not - or unwisely disrespected - the Fellowship and the expectations or desires of some of its most prominent figures. The

[1280] Driver, On geography as a visual discipline, 229.
[1281] RGS Founding charter, 24 May 1830 in Driver, *Geography Militant,* 27.
[1282] Reeves, *Recollections of A Geographer,* 36.
[1283] della Dora, Travelling landscape-objects, 335.

consequences of this would reverberate throughout the Society for decades and engender significant transformations in geography education.

The sections on Dunmore and Grossman evidenced the range of image genres presented via lantern-slides in lectures and the powerful emotional and imaginative effects audiences perceived them to have. These effects can be measured from the verbal responses of audiences in discussions. Ultimately, it was neither the scientific or educational utility of the lantern that carried hearts and minds at the RGS, but its aesthetic possibilities.

In following the historical geographical evolution of lantern-slide 'travelling landscape-objects' I have elucidated how the medium was set in motion through the geographical projections spaces of the RGS Evening meeting lectures between 1888 and 1894.[1284] Within the context of these meetings lantern-slide projections were harnessed as a heuristic device that visually evidenced human and topographical geographical phenomena in a distant foreign field, and activities undertaken there by both travellers and scientific practitioners of a range of sciences, and within the context of scientific practitioners' growing authority. The evidence these lecturers presented to substantiate their knowledge claims was often photographic. The effects of such demonstrations and their collective witnessing by the RGS's audiences suggested that lantern-slide projections can be understood as 'transformers' in two ways; firstly, in their role as vectors of notionally objective positivist empirical inductive method of knowledge presentation, and secondly, via the projection of lantern-slides that

[1284] della Dora, Travelling landscape-objects, 334-354.

photography was simultaneously promoted to the Fellowship as a valid practice of geographical knowledge production.

In this period lantern-slides therefore became integral to the visual and verbal geographical knowledge performances and as a tool for the vigorous demonstration of empiricist methods of evidencing and analysis, notably by Freshfield. Freshfield was pivotal in gaining the acceptance of the lantern. His faith in geography's status as a valid branch of science with increasingly defined and standardized methods and scope is also significant, though complex since whilst his actions may have lent support to the scientific identity of geography, they unsettled large parts of the Fellowship. He showed that geography could be cognitively exercising and of national and scientific value. This increased emphasis upon the scientific standards of evidencing, notably by presenting visual evidence often in projected lantern-slide form, in the RGS meetings was nevertheless only partly due to the projection of lantern-slide images. Rather it was dependent upon the use of images, brought to evidence ideas and made to perform, by lecturers and audience members. These insights into the scale and extent of change in the Society's visual and knowledge making practices provide additional dimensions to the debate about the attempt to gain the admission of women to the RGS in 1893.

CHAPTER 8. THE SENSATIONAL SCIENCE OF GEOGRAPHY

> Rarely have men of science shown greater daring than these founders when they boldly held up geography as an entertaining branch of knowledge and a source of amusement. And hard and successfully have their puritanical successors fought to ensure that no undue hilarity should enter into the dignified proceedings of the now elderly Royal Geographical Society. Yet, in the nature of things, there is no reason why geography, or any other science, should not be entertaining. […] Still those who fought against "entertainment" and "amusement", and all that would make the proceedings of the Society "popular", had some reason on their side. […] And it is from this assured mastery of science, or a certain part or aspect of it, that entertainment naturally flows, and that the public can therefore enter into an enjoyment of it.[1285]

Introduction

Thus argued the former army officer and explorer Francis Younghusband (1863-1942) upon the centenary anniversary of the RGS in 1930. Younghusband had been intimately involved in, and a frequent lecturer at, the Society since the 1880s. He went on, in the above article, to celebrate the collections of the RGS including its lantern-slides, which by 1930 numbered 26,000 individual slides.[1286] The previous chapters have demonstrated that Younghusband's quote can be critiqued for its diffusionist understanding that posits a unilateral flow of knowledge from the realm of science to a popular sphere. However, his view usefully underscores the complexities of the debate that centred around the transformations to the RGS in the period c.1885 and 1930, and the centrality of the lantern to them.

[1285] F. Younghusband, This Week's Doings, A century of Geography / The R.G.S. and It's Work/ Famous Names/ From Speke to Shackleton, *The Observer*, 19th October 1930. (RGS press cuttings folder).
[1286] Younghusband, This Week's Doings, A century of Geography / The R.G.S. and It's Work/ Famous Names/ From Speke to Shackleton, *The Observer*, 19th October 1930. (RGS press cuttings folder).

The lantern and the realm of entertainment have a long and intertwined history. Historians of science have scrutinized the social effects of the lantern in the seventeenth century and located the medium 'between educated, popular and courtly cultures'.[1287] This public fascination with science continued to be mediated by displays of 'dazzling new technologies, through encountering exotic animals and plants, and through experiencing heated controversies about the validity of novel theories'.[1288] The literary and visual techniques adapted by nineteenth-century 'popularizers of science' to attract audiences have been identified by Secord, Lightman, Morus and others.[1289] Amongst historical geographers Driver has pointed to the tensions between the RGS and popular and commercial 'entertainments' on geographical themes. [1290] Like Younghusband above, Driver exposed the controversial nature of the lantern at the RGS, and the trepidation of the Society's 'conservative' members who feared the popular and sensational associations of the lantern would impact the Society. [1291]

The lantern-slide was, in the eyes of some, rather than all, 'associated with the vulgarisation of expertise and the substitution of sensation for science: slideshows, after all, were for women and children'.[1292] The Society's engagement with, and resistance to, different forms of image, thus falls within the bracket of geographies of morality since the perceived truth-making and disseminating utility of the lantern-slide and lantern were overshadowed by their association with notionally popular or

[1287] Vermeir, The magic of the magic lantern (1660–1700), 127–159.
[1288] Lightman. *Victorian Popularizers Of Science,* 3.
[1289] Howard, 'Physics and fashion', 729.
[1290] Driver, *Geography Militant*, 1-2, 148, 153.
[1291] Driver, *Geography Militant*, in Driver, On geography as a visual discipline, 229.
[1292] Driver, On geography as a visual discipline, 229.

unscientific uses.[1293] From this we deduce that the relationship between notionally scientific visual methods of evidencing and optical instruments was ambiguous. Paradoxically, lantern-slides and the lantern advanced truth-claims as much they denigrated them. A historical geographical understanding of lantern function and effect in a single institution at the turn of the nineteenth- and twentieth-centuries such as that provided here queries some of the aforementioned interpretations.

Additionally, I contribute to understandings of the anthropologist Lévi-Strauss, who in the mid-twentieth century, represented the lantern and slide projector as machines for retailing traveller's tales to a passive audience that he understood as being directly opposed to the 'practices and aims' of the practitioners of science such as anthropologists.[1294] As I show below, 'scientific practitioners', 'would-be professionalizers of science' and 'popularizers of science' did indeed show coloured slides and fill halls.[1295] However, I also argue that these performances were endorsed by the RGS, its staff and a growing number of professional practitioners of geography and other sciences in the period studied here, precisely because of the lantern's transformative side effects. I also argue that within the RGS geographical projections space a single individual might take on both role of practitioner and popularizer of science. In their performances lantern-slides were a central element. Thereby, I demonstrate a further aspect of the 'travelling landscape-objects' that were lantern-slides.[1296]

[1293] F. Driver, Morality, politics, geography: brave new worlds, in C. Philo (Ed), *New Words, New Worlds: Reconceptualisating Social and Cultural Geography,* Aberystwyth, 1991, 61-64; F. Driver, Moral geographies: social science and the urban environment in mid-nineteenth century England, *Transactions of the Institute of British Geographers 13* (1988) 275-287; S. Legg and M. Brown, Moral regulation: historical geography and scale, *Journal of Historical Geography,* 42 (2013) 134-139.
[1294] Driver, *Geography Militant,* 1.
[1295] Lightman, *Victorian Popularizers Of Science,* 10-13.
[1296] della Dora, Travelling landscape-objects.

An uneasy relationship: popularization and the RGS before the lantern

The previously outlined concerns about the lantern may not only have arisen from its association with commercial ventures and individuals and expeditions perceived to be of dubious scientific authority and social standing. Although 'the promotion and diffusion of that most important and entertaining branch of knowledge, Geography' had been written into the Society's founding charter, contentions also stemmed partly from deeply-rooted insecurities regarding both the validity of the knowledge produced by the RGS as well as doubts about geography's status as a notionally scientific discipline.[1297] From as early as 1838, the publication of popularizing manuals such Harriet Martineau's *How to Observe – Morals and Manners* (1838) for the Society of Diffusion for Useful Knowledge and the RGS' first edition of *Hints to Travellers*, which provided general advice to untrained explorers, had caused dissent amongst the geographical community and reflected 'anxiety over the ownership of geographical knowledge'.[1298] In 1853, just twenty-three years after the Society's founding, and during the second presidency of Sir Roderick Murchison (1851-53), tensions between those keen for more exclusive, scientific meetings and others who enjoyed the large crowds of popular meetings were still surfacing. For example, in 1853 Fitzroy wrote the following to Dr. Shaw, then Secretary of the Society:

> I admire your own active energy and comprehensive views. I see that while you give due weight to the station and well earned influence whether of rank or abilities, of those who are above us in the World's

[1297] RGS Additional papers 115, The Raleigh Club, 1827–54', Report of meeting of Raleigh Travellers' Club, 24 May 1830, Royal Geographical Society, London.
quoted in Driver, Geography Militant, 27.
[1298] Driver, *Geography Militant,* 61.

> scale – you hold out an encouraging hand to, the less known and uninfluential. […] I think your efforts have done a great deal for the Society – but I [XXX] the difficulty of combining the popularity now enjoyed – with the cordial assistance and good report of such men as Mr. Hamilton (senior) to Mr. parish – Lt. Radstock & Colchester - Raper and others – who rather desire a quiet and very scientific gathering – and dislike our large, popular meetings at the Institution. The money is a main consideration I am well aware – but between the "goldfinder" and yourself no doubt it will continue to be forthcoming.[1299]

The individuals listed in Fitzroy's letter were not alone. The debates about the value of different forms of popularization continued throughout the nineteenth century, occasionally overlapping with personal animosities. In 1864 the RGS was attacked by the botanist Joseph Hooker for the course taken by the Society under Murchison. The Society was accused of 'its utter want of Science and craving for popularity and excitement […]' and, consequently, for not giving due recognition to 'steady, slow and scientific surveyors and travellers'.[1300] The 'populism and pretension' of the RGS soon became distasteful to other prominent members of the Society.[1301] The Fellowship, which had, in its earliest decades, included numerous members of the Royal Society, began to transform in the second half of the nineteenth century.[1302] The RGS' courting of public attention and the force that media and audiences exerted upon the Society, also impacted 'a number of disciplinary motifs that substantially molded the shape of British geography throughout the Victorian period.'[1303] This is confirmed by the

[1299] RGS CB4/628 c. 1851 – 1860, Admiral R. Fitzroy, from Fitzroy to Dr. Shaw, 7th November 1853 (pages 9 – 12).
[1300] Joseph Hooker quoted in Livingstone, *The Geographical Tradition*, 160.
[1301] Livingstone, *The Geographical Tradition*, 160.
[1302] Stoddart, The RGS and the 'New Geography', 194; D. Gilbert, D. Matless and B. Short, *Geographies of British modernity: space and society in the twentieth century.* MA, Blackwell Pub. (2003).
[1303] Livingstone, *The Geographical Tradition*, 160.

falling number of RGS Fellows who were also affiliated to the RS in the second half of the nineteenth century.[1304]

The selection of speakers who communicated their subjective human experience of travel is corroborated by Freshfield's recollection, at the 1930 RGS centenary meeting, of Murchison's response to his (Freshfield's) first submitted paper to the Society in 1869. Freshfield recalled the following scene: 'Your paper,' Sir Roderick said, 'is too long: on reading you can leave out the geography; print it afterwards; give us the adventure.'[1305] Freshfield stated that he did not quote this 'as a *lapsus linguae*, but as a significant *obiter dictum*. It was an outcome of Sir Roderick's feeling that to make his beloved Society a success he must show geography to be, in the phrase of its founders, not only ''a most important but an entertaining branch of knowledge.''[1306] The promotion of papers on adventure may have entailed the exclusion of others, which represented place on other scales and in a more scientific language. The intentional editing of published lectures to heighten this, and the cultivation of a taste for such 'popular' subjects in audiences in the mid-nineteenth century by Keltie, as editor of the *GJ* from 1892, is further evidenced below.

Geography, commerce and sensationalism

Scholars, such as those referenced above, have demonstrated that as patterns of science, display and discovery changed throughout the nineteenth century, so too did the perceived function of the lantern. Regarded by many as a 'toy' in the first half of the century, by the 1880s the

[1304] Stoddart, The RGS and the 'New Geography', 195.
[1305] D. Freshfield et al., The Centenary Meeting: Addresses on the History of the Society, *The GJ* 76 (6), (1930), 462.
[1306] Freshfield et al., The Centenary Meeting, 462.

lantern was also widely known as a scientific and educational tool.[1307] Prior to the 1860s the lantern and lantern-slides were, predominantly, a medium associated with entertainment practices.[1308] In order to attract audiences producers at entertainment venues had recourse to dramatic visual effects such as those produced by the lantern.[1309] Accordingly, scholars have recently begun to address the history of scientific spectacle and to contextualize these displays within broader cultures of communication, exhibition and science.[1310] Numerous studies observe the proliferation of geographies of the lantern across the nineteenth century. Londoners, and predominantly inhabitants of other cities, could choose from a veritable salmagundi of scientific and artistic delights.[1311]

The processes of popularization, and conversely the parallel one of expanding scientific practices, were by no means unilateral ones, but were instead overlapping and undertaken via lantern-slide lectures across an array of venues. The force exerted on the shape and content of science by the expanding number and range of sites of scientific practice, display and reception, including 'workingmen's lectures, penny magazines, galleries of practical science, public gardens, arboretums and civic museums' accounts for the changing position in society of science throughout the century.[1312] Consequently, historical geographers can contribute to their own histories

[1307] Stafford and Terpak, *Devices of Wonder*; T. Gunning, Hand and eye: excavating a new technology of the Image in the Victorian era, 495-516.
[1308] Kember, *Marketing Modernity,* 61.
[1309] Daunton, *The Organisation of Knowledge in Victorian Britain*, 2; Howard, 'Physics and fashion'; Schaffer, Transport phenomena; Schwartz, *Spectacular Realities*.
[1310] Morus, Seeing and Believing Science, 102; Altick, *The Shows of London;* For scientific exhibitions see I. Morus, S. Schaffer, and J. Secord, Scientific London, in *London—World City, 1840,* C. Fox (Ed), Yale Univ. Press, 1992, 129-143.
[1311] Morus, Seeing and Believing Science, 109.
[1312] Morus, 'More The Aspect of Magic than Anything Natural': The Philosophy of Demonstration in Fyfe and Lightman (Eds), *Science in The Marketplace: Nineteenth-Century Sites And Experiences*, 336; Daunton, *The Organisation of Knowledge in Victorian Britain*, 2.

and those of other disciplines by mapping the communication of knowledge across the nineteenth century on a range of geographical scales and sites and in relation to diverse disciplinary epistemologies.[1313] In doing so they can query traditional understandings of the emergence of professional sciences and, more generally, those concerning the manufacturing of knowledge.[1314] There remain, however, voids in our understanding of the mechanisms by which esoteric and popular knowledge were mediated both in relation to each other and via technologies. Driver has asserted that geographical truths were articulated in many forms in the nineteenth century and identified the plurality of cultures of exploration associated with the RGS.[1315] Popular journalism, he postulated, and wider changes within the publishing sphere in the last third of the century resulted in profound changes to the business of exploration. [1316] Yet textual sources disproportionately dominate these studies. Lantern-slide lectures await to be instated into our present understandings of such historical process, most especially since, as this thesis shows, they were media performances experienced by so many across the country. This task is critical because, in the process of remediation into print, lantern-slide lectures formed the basis of much visual and verbal content of said textual sources. Finally, a consciousness of the dialogical interactions of textual, visual and verbal media is vital. At the RGS the purposes and methods of exploration, as well as the mutually-constituting textual, verbal and visual styles of narrating experiences of exploration were adapted to increasingly diverse, audience

[1313] Secord, *Victorian Sensation*; Lightman, *Victorian Popularizers Of Science*.
[1314] Naylor, The field, the museum and the lecture hall; Naylor, Introduction: historical geographies of science*,* 1-12; Finnegan, Exeter-Hall science and evangelical rhetoric in mid-Victorian Britain, 46-64; Finnegan, Geographies of scientific speech in mid-Victorian Edinburgh in Livingstone and Withers (Eds), *Geographies of Nineteenth-Century Science*, 153-177.
[1315] Driver, *Geography Militant*, 10.
[1316] B. Riffenburgh, *The Myth of the Explorer,* 1993 in Driver, *Geography Militant*, 10.

demographics.

Mapping the to-ings and fro-ings, as I do here, of just a few of such prominent figures of public science who were active within these different geographical and social spaces, and their use of the lantern, reveals new configurations of knowledge exchange networks across the London social, scientific and societal landscape, and beyond. Scholars have persuasively demonstrated that 'Geography was being more actively promoted within the BAAS and in diverse ways decades before figures such as Keltie and Mackinder […] campaigned for the presence of a 'new' modern geography geared towards educational demands'.[1317] That Section E of the BAAS 'negotiated its own scientific credibility' in relation to other sciences, the diversity of audiences and appropriate methods of presenting geographical knowledge. This study confirms this and shows additional important ways in which the BAAS and RGS practices differed, notably over the lantern's use in geographical knowledge presentation practices.[1318] That the RGS' adoption of the magic lantern was a reflection and consequence of changing geographies of science and the increasing internationalisation of British and imperial science practiced in a greater range of spaces and widening social range throughout the 1880s is further evidenced.[1319] In a report of the Autumn 1884 BAAS conference in Montreal, Canada, delivered to the Royal Colonial Institute and attended by prominent Fellows of the RGS, the author, Lefroy, a geologist, drew attention to the Rev. D.W. H. Dallinger's (1839-1909) lecture on 'The Origin and Life History of the Least and Lowest Living Things' and ventured his personal opinion 'that in

[1317] Withers, Finnegan, and Higgitt, Geography's other Histories?, 437; Withers, Scale and Geographies of Civic Science in Livingstone and Withers (Eds), *Geographies of nineteenth-century science*, 73-98.
[1318] Withers, Finnegan, and Higgitt, Geography's other Histories?, 437.
[1319] Withers, Finnegan, Higgitt, Geography's other Histories?, 433-451.

the novelty of the subject to almost all present, in the beauty and clearness of the illustrations, which were thrown on a large screen by a magic-lantern, in the felicity and enthusiasm of the lecturer, this effort has never been surpassed at any meeting of the British Association.'[1320] With his powers of communication, and the seriousness with which his studies of 'protozoology' were taken since he was a Fellow of the Royal Society, Dallinger was evidently a force to be reckoned with.[1321] A methodist Christian clergyman, Dallinger conducted innovative experimental scientific investigations into the evolution of unicellular organisms, and communicated his findings via the lantern within a conceptual framework of natural theology at a time of ongoing debates about the authority of theories of natural selection. His BAAS lecture and the images that presented empirical evidence in support of his arguments challenged the logic of secular evolutionary theory. He exemplifies the extent to which religion and science remained imbricated towards the end of the nineteenth century.[1322] Della Dora's 'numinous materialities' apply to Dallinger's harnessing of images. Key RGS figures were associated with the lecture, including the chemist and liberal politician, Sir John Lyon Playfair, who participated in the lecture discussion,[1323] but also attended Lefroy's lecture. Also present was Henry Nottidge Moseley. The example of Dallinger's projection of microscopic bacteria via lantern projections exemplifies the proportional relationship between visual technologies, scales of representation, public

[1320] Gen. Sir J. H. Lefroy, *The British Association in Canada*, pamphlet of The Royal Colonial Institute, Unwin Brothers, 1885.
[1321] J. Hass, The Reverend Dr William Henry Dallinger, F.R.S. (1839-1909), *Notes and Records of the Royal Society of London 54* (1), (2000), 53-65.
[1322] Turner, *Between Science and Religion*; B. Lightman, *The Origins of Agnosticism*, The John Hopkins University Press, 1987; Lightman and Zon (Eds), *Evolution and Victorian Culture.*
[1323] Anonymous, The British Association: Section B – Chemistry, *Nature*, 30, 2 October, 1884, 550.

understanding and emotional engagement with science in the manner of 'transport phenomena'.[1324]

The Royal Polytechnic Institution (RPI), renowned for popular science lectures, scientific instrument demonstrations and theatrical performances, has received considerable attention.[1325] The Institution was at once a scaled up laboratory and theatre and educational and entertainment institution where audiences themselves comprised elements of the experiment.[1326] Located at the north of London's Regent Street, the RPI was just a few blocks from the RGS. Popular demonstrators such as John George Wood and John Henry Pepper of the RPI, scholars argue, intuited that audiences desired both instruction and entertainment, and that the boundaries between 'education and edification' were 'transient'.[1327] In the mid-nineteenth century thanks to the sensational phantasmagoria, 'Professor Pepper's ghost' slide show, created by Dr. Henry Pepper, the Institute director, principal lecturer and showman, saw the RPI meet with notoriety.[1328] The performances given by these showmen drew huge audiences by appealing 'to the eyes of their audience in their lectures and writings'.[1329]

Several studies have started to piece together the involvement of explorers at the RPI.[1330] The examples investigated show that the lantern

[1324] Schaffer, Transport phenomena, 75.
[1325] Weeden, *The Education of the Eye*; *Victorian Popularizers Of Science*, 196-216; Brooker, *Temple of Minerva.*
[1326] Galison, *Image and Logic: A Material Culture of Microphysics*, 553-559; Golinski, *Making Natural Knowledge,* 29.
[1327] Lightman, *Victorian Popularizers Of Science*, 10; J. A. Secord, Quick and magical shaper of science. *Science Magazine* 297, (2002), 1648–1649; Howard, 'Physics and fashion', 729; I. R. Morus, Worlds of wonder: Sensation and the Victorian scientific performance, *Isis* 101 (4), 811.
[1328] Hankins and Silverman, *Instruments and the Imagination*, 66; Brooker, *Temple of MInerva.*
[1329] Lightman, *Victorian Popularizers Of Science,* 10/X.
[1330] Weeden, *The Education of the Eye*; Lightman, *Victorian Popularizers Of Science*, 166-218*;* Brooker, *Temple of MInerva.*

was used by individuals to promote and communicate geographical and exploration narratives beyond the confines of the RGS and its audiences. These lantern-slide lectures communicated geography in entertaining narrative formats and via new media for the individual and financial ends of the speaker rather than those of the Society.[1331] Such activities could potentially subvert the authority of the RGS.

Wallis provided scattered references to the extensive global, British and metropolitan range of the artist-explorer, Thomas Baines' lantern-slide lectures.[1332] In 1854 Baines displayed his own paintings in an RGS lecture.[1333] However, the map of Baines's 1860s lectures took in the Hull Royal Institute, the Royal Polytechnic Institute in London, where he spoke on the Abyssinia campaign in c 1866-67 as well as the Highgate Literary and Scientific Society in 1867.[1334]

Another explorer and Fellow of the RGS, Richard Francis Burton who was often in a financially insecure position owing to a lack of family money, delivered at least one lantern-llustrated lecture at the RPI.[1335] The 'lecture entertainment' on Burton's published work 'Pilgrimage to Mecca', took place at the RPI in 1865 as part of the Institute's Easter programme. In the lecture Burton recounted the pilgrimage he made to Mecca in 1853. The programme indicates that the performance was heightened with a number

[1331] See Crangle and Kember for a wider view on lantern narrative formats.
[1332] J.P.R. Wallis, *Thomas Baines of King's Lynn, Explorer and Artist, 1820-1875,* Jonathan Cape, 1941; H. Luckett, Thomas Baines: 1820-1875, *The GJ* 141 (2), (Jul., 1975), 252-258.
[1333] J. Gooding, Thomas Baines: the heroic figure in the landscape, in (Eds) J. Carruthers and L. Stiebel, *Thomas Baines Exploring Tropical Australia 1855 to 1857*, Canberra, National Museum of Australia, 2010, 74.
[1334] Wallis, *Thomas Baines of King's Lynn, Explorer and Artist, 1820-1875,* Jonathan Cape, 1941, 117 and 152 [the Cape Town exhibitions and lecture], 158 [the Hull Royal Institute lectures], 158-160 [the Royal Polytechnic Institute lectures]. E. Hartrick, Thomas Baines: Empire Man and Magic Lanternist, 543.
[1335] M. S. Lovell, *A Rage To Live: A Biography Of Richard and Isabel Burton,* Abacus, 1999; Anonymous, The Royal Polytechnic Institution, *The North London News*, Saturday April 22 1865, 3.

of sensational effects, including Pepper's famous phantasmagoric ghost scene. A pamphlet, *The Guide-Book*, a slimmed-down version of Burton's *Personal Narrative of a Pilgrimmage to Al-Madinah and Meccah* (1855), was printed as a souvenir to accompany the show.[1336] Burton's participation in this form of popular entertainment may have cemented his reputation as 'a lion of the season'.[1337] Thus those at the RGS who objected to the lantern may have associated it with such a contentious figure of geographical exploration as Burton and with a more popular venue such as the RPI, where the line between entertainment and education, and artifice and science was ambiguous.

Mill recorded that the objections to the lantern were founded on the grounds that the lantern would 'lower the tone of the Society's meetings to a Sunday school treat'.[1338] The perceived nature of the lantern by those who opposed the medium's use was a vexed question. For its opponents, the geography of lantern use, such as those outlined above in relation to Baines, Burton and Stanley, shaped the lantern's identity. This informs how we might account for the anthropomorphic association of the lantern with religion and nonscientific views of the world so mistrusted by certain RGS Council members. By anthropomorphic I understand that the perceived social users of the lantern were taken as defining the nature, authority and potential uses, of the lantern technology. The identity of the lantern was therefore socially relational. The medium's distinct geographies of use, for entertainments such as the RPI phantasmagoria and religious propagandizing affected the perception of the instrument's value and

[1336] B. Weeden, *The education of the eye: history of the Royal Polytechnical Institution 1838-1881,* U.K. Granta Editions, 2008, 78-79; Brooker, *The Temple of Minerva,* 118.
[1337] Driver, *Geography Militant*, 48.
[1338] Mill, *The Record,* 103.

entailed its characterization as sensationalizing, vulgar and unscientific.[1339] However, I believe that the debate about the utility of the lantern may have been more complex. Differing notions of what was or was not deemed to be good scientific practice also shaped perceptions of the lantern; the objections raised and the association of the technology with a 'Sunday school treat' point to the perception that the medium was strongly affiliated with Christian belief, and perhaps by extension natural theologians and opponents of secular evolutionary theory. The activities of the band of Hope, who from 1862 engaged in regular lantern activities and from 1866 hired out lantern-slide sets thus coloured such perceptions, [1340] and doubtlessly as much as the harnessing of the lantern in the 1880s by Christian charity and welfare organisations such as the Church Army, founded in 1882.[1341] The struggles for cultural supremacy between scientific and clerical elites played out into the latter decades of the nineteenth century and evidently influenced the RGS's practices.[1342] The concept of 'numinous materialities' implies the attribution of powers, in anthropomorphic fashion to a referent, in that case an icon.[1343] As such it represents an instance of fetishization in which symbolic powers are credited to a visual and material form.[1344] Similarly, at the RGS there occurred the fetishization of the lantern by both those who supported its adoption and those against it.

[1339] Lightman, *Victorian Popularizers of Science,* 166-218.
[1340] A-M McAllister "to assist in the pictorial teaching of temperance" in Vogl-Bienek and Crangle (Eds), *Screen Culture and the Social Questions 1880-1914*, 127.
[1341] M. Loiperdinger, The Social Impact of Screen Culture 1880-1914 in Vogl-Bienek and Crangle (Eds), *Screen Culture and the Social Questions 1880-1914*, 11.
[1342] Turner, *Between Science and Religion, The Reaction to Scientific Naturalism in Late Victorian England*; Lightman and Zon (Eds), *Evolution and Victorian Culture*; Dawson and Lightman (Eds), *Victorian Scientific Naturalism.*
[1343] della Dora, Inverting perspective.
[1344] Latour, *Pandora's Hope, Essays on The Reality of Science Studies,* 113-144.

Light entertainments: the RGS Evening Meetings and soirée salons c c.1886 – 1894

As demonstrated above, the RGS had a long-standing association with sensational entertainment prior to the use of the lantern. With the advent of the lantern in the Society's presenting practices, speakers and audiences were encouraged, notably by Freshfield, to do the opposite; science took centre stage and the adventure, if not entirely excluded, became peripheral in the first years of lantern use. This pattern emerged within a climate of, firstly, the growing power of the scientific practitioners.[1345] It came, secondly, from the perception that there were few tracts of the world left to explore and that as the task of mapping was nearing an end, enquiries of a scientific nature on both a greater and smaller scales represented the future.[1346] As Mill recalled in 1930, 'The old type of travel paper had often proved intolerably dull in the reading, and drew small audiences, save when explorers who were already heroes to the newspaper public held forth'.[1347] Freshfield satirized such views in verse:

> When the Secretary reads
> Dreary Minutes, no one heeds,
> When the Chairman perorates,
> When the traveller dilates,
> Proving, till the audience clap,
> All the merits of his maps,
> While the Pointer, ~~all~~ (sic) quite astray,
> Wildly points another way.[1348]

Driver alluded to the importance of amusing anecdote in communicating geography.[1349] However, the role of visual forms in conveying knowledge in

[1345] Turner, *Between Science and Religion*; B. Lightman, *The Origins of Agnosticism*, The John Hopkins University Press, 1987; Lightman and Zon (Eds), *Evolution and Victorian Culture.*

[1346] Rutherford Alcock, RGS President address (Sir R. Alcock, Presidential Address, *Proceedings of the RGS* 21 (1876–7), 23 in Jones, Measuring the world, 318).

[1347] Mill, *The Record,* 143 -144.

[1348] D. Freshfield, RGS Additional papers 11[in pencil on cover: One full copy to D.W. Freshfield to 1 Savile Row W] Quips for Cranks or Mujae (amended in pencil to Nugae) Savilianae: 45 – 46.

[1349] Driver asks whether humour '[…] enhances or undermines the authority of the lecturer

a sensually stimulating, pleasurable and amusing way has until recently, constituted a gap in historical geographies of lantern-slides and the RGS. Recently, Geoghegan and Woodyear adapted Schneider and Bennett's research to geographical analysis and have undertaken important work on the themes of enchantment and delight.[1350] Informed by such works, I therefore consider the authority of pleasure in relation to visual aspects of landscapes and peoples seen by travellers and recorded by them with the camera or pencil and paint, and 'witnessed' by RGS audiences via lantern-slide projections. The latter were important props in creating and sustaining the collective experience of 'enthusiastic geographies' first in the Burlington House lecture theatre but later, as I show, across other geographical projections spaces, and amongst the diversifying RGS audience demographic.[1351] There co-existed multiple visual registers or languages and foci of enthusiasm in the RGS's lecture practices. As at the Section E BAAS meetings, this is exactly what part of the Fellowship craved from the RGS Evening meetings; sensation that can be further qualified as wonder, delight and transcendent experiences drawn from the 'numinous' lantern-slides.[1352] Such emotions have been associated with practitioners and performances of a number of sciences.[1353]

At the RGS the lantern was not exclusively deployed in lectures. This concurs with recent scholarship on 'popular exhibitions' of science from

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[...]' (Driver, On geography as a visual discipline, 229).

[1350] Schneider, *Culture and Enchantment*; Bennett, *The Enchantment of Modern Life*; T. Woodyer and H. Geoghegan, (Re)enchanting geography? The nature of being critical and the character of critique in human geography. *Progress in Human Geography* 37, (2013), 195-214; H. Geoghegan, Emotional geographies of enthusiasm: belonging to the Telecommunications Heritage Group, *Area* 45, (2013), 40-46.

[1351] Geoghegan, Emotional geographies of enthusiasm: belonging to the Telecommunications Heritage Group, 40.

[1352] Withers, Geography and science in Britain, 1831-1939, 92.

[1353] B. Lightman, *The Origins of Agnosticism*; F. D. Ledley, Visions of a source of wonder in J. D. Proctor (Ed), Envisioning Science And Religion, Templeton Press, 2009, 245-270.

Alberti in his study of the Royal Society conversaziones, also known as 'Ladies Night'.[1354] Plunkett and Sullivan and Rossell mapped geographies of science and knowledge-making in indoor spaces such as conversaziones, and in outdoor fairs and bazaars.[1355] Such works assess the significance of these gatherings in local civic affairs, and their presence not just in iconic entertainment institutions of urban centres, but across a range of British provincial settings. These scholars present nuanced approaches that embrace the 'showmanship' of nineteenth-century science.[1356] Their emphasis on the study of science as performance queries the notion of rational recreations so as to 'get us thinking about science in terms of doing rather than writing, aesthetic pleasure rather than hard reason.'[1357] Thus the popularity of geographical subjects is visible in the sporadic references to the geographical subjects of soirées in which Thomas Baines participated at Guy's [Hospital].[1358] Mackenzie understood the Liverpool Geography Society's hosting of soirées at the Walker Art Gallery, Free University and Museum, where members could meet the local landed gentry, the earl and Countess of Derby as illustrative of wider municipal geographies of imperialism.[1359]

The RGS was typical of other nineteenth-century institutional practices in its inclusion of working models alongside the visual treats of lantern

[1354] Alberti, Conversaziones, 217.
[1355] Plunkett and Sullivan, *Fetes, Bazaars and Conversaziones: Science, Entertainment and Local Civic Elites,* 41- 60 in Kember, Plunkett and Sullivan (Eds), *Popular exhibitions, Science and Showmanship, 1840-1910*; Rossell, Demolition d'un mur, 310 and 319.
[1356] Kember, Plunkett and Sullivan (Eds), *Popular Exhibitions, Science and Showmanship, 1840-1910*, 4.
[1357] Kember. Plunkett and Sullivan (Eds), *Popular Exhibitions, Science and Showmanship, 1840-1910,* 4.
[1358] J. P.R. Wallis, *Thomas Baines of King's Lynn, Explorer and Artist, 1820-1875,* Jonathan Cape, 1941, 159.
[1359] Mackenzie, The provincial geographical societies in Britain, 1884 -1914, 106 in Bell, Butlin and Heffernan (Eds), *Geography and Imperialism, 1820-1940*, 106.

projections recognized by Alberti, and Plunkett and Sullivan.[1360] As such these RGS gatherings were, as at other learned institutions, multi-sensual and interactive events.[1361] Such exhibitions and performances have been understood by Alberti as the social capitalization of science and technology within middle-class rituals.[1362]

The revival of an earlier RGS tradition of annual soirées at this time 'added to the attractiveness of the Society […] by inducing many new members to join justified the expense incurred.'[1363] It had been said that soirées constituted opportunities "of occasional intercourse …'lubricate the wheels of science'"[1364] Once a year, most often in May, June or July from the 1880s and up until 1914, the Society held evening receptions, known as either 'soirées' or 'conversaziones,' to mark the anniversary founding of the Society and the end of each annual session. These events gave Fellows and their guests (women included) the opportunity to circulate and display themselves upon a social stage where they could see and be seen by ambassadors, heads of museums and other scientific institutions and others of fashionable London.[1365] Here then was an opportunity for individuals to converse with some of the leading luminaries of the Society, indicating that despite the expanding print and publishing market, oral culture remained significant in the dissemination and pollination of knowledge.[1366]

Although undoubtedly managed to some degree, these opportunities of face-to-face exchange engendered particular forms of power relations

[1360] Alberti, Conversaziones, 211 and 213; Plunkett and Sullivan, Fetes, Bazaars and Conversaziones: Science, Entertainment and Local Civic Elites, in Kember. Plunkett and Sullivan (Eds), *Popular Exhibitions, Science and Showmanship, 1840-1910*, 44.
[1361] Alberti, Conversaziones, 218 and 220.
[1362] Alberti, Conversaziones, 209; Plunkett and Sullivan, *Fetes, Bazaars and Conversaziones: Science, Entertainment and Local Civic Elites,* 41-60.
[1363] Mill, *The Record*, 143.
[1364] Mill, *The Record,* 66-67.
[1365] Alberti, Conversaziones, 208, 209 and 223.
[1366] Alberti, Conversaziones, 220.

distinct from other knowledge making events. As well as the human show, in which participants were equally exhibited and objectified, and objectifying and exhibiting, the RGS showed maps, pictures, photographs and objects illustrating geography and travel to entertain their guests.[1367] From 1888, when the RGS soirée was held at the fashionable Willis' Rooms (a club which had originally opened under the name of Almack's in 1765, and which was one of the earliest to admit both men and women), the magic lantern was also used in conjunction with other visual instruments at these events.[1368] This suggests that soirées comprised a space in which the Society was prepared to showcase modern technologies that could not be readily endorsed on a more frequent basis in its meetings. For instance, the RGS soirée of June 1889 included a display from the pioneering showman of motion photography Edweard Muybridge (1830-1904).[1369] This was just one such event on the extensive lecture tours undertaken by Muybridge following the publication of *Animal Locomotion: An Electro-Photographic Investigation of Consecutive Phases of Animal Movements, 1872-1885* in 1887.[1370] Juxtaposed to this was a working model of the Atlantic ocean currents, as well as lantern-slide projections of the Alps and Caucasus. In a review of the event *The Morning Post* highlighted the scientific value of the visual exhibits:

[1367] RGS Committee Minute Books, Special Committee of Council, May 16 1888, 243.

[1368] 'The Dioptric Lantern to be shown in the bottom Room. Mr. Newton to be consulted as to slides. The photographs and Pictures to be arranged on screens sloped together on tables down the middle of the room. Pictures to be applied for from - Sir Richard Temple; Colonel Woodthorpe and Edward Whymper, Esp.' (signed off by Strachey). (RGS Committee Minute Books, Conversazione Sub-Committee, June 20 1888, 246).

[1369] L. J. Schaaf, ODNB entry for Edweard James Muybridge: http://0-www.oxforddnb.com.lib.exeter.ac.uk/view/article/35174 (accessed 11.02.2016); RGS Committee Minute Books, Soiree Sub-Committee Meeting Minutes, June 19 1889, 287; Financial Committee Minutes, July 1, 1889, 288-290; Mannoni, Nekes, Warner, *Eyes, Lies & Illusions, The Art of Deception*, 206; A. C. Danto, The naked truth in S. Walden, *Photography and Philosophy: Essays on The Pencil of Nature,* Wiley-Blackwell, [2008], 2010, 298-300.

[1370] L. Mannoni, *The Great Art of Light And Shadow: Archaeology Of The Cinema*, University of Exeter Press, 2000, 317-319.

> At intervals during the reception Mr. Edweard Muybridge exhibited projections of the automatic electro-photographic apparatus used for his investigation of animal locomotion, by means of which consecutive photographic exposure are synchronously made from two or more points of view at exact and regulated intervals of time. These projections by the oxyhydrogen light, which illustrated the phases of movement by human beings and quadrupeds – walking, running, galloping, &c. – and birds while flying, were not only of high scientific importance, but afforded much entertainment to successive groups of the guests. In the tea-room an ingenious and elaborate working model of the ocean currents of the Atlantic was exhibited and explained by the inventor, Mr. Arthur W. Clayden; and in the lower room, by the dioptric lantern, photographic views of the Caucasus and the Alps shown by Mr. Clinton L. Dent.[1371]

Clayden's working model is undoubtedly fascinating to this study of 'travelling landscape-objects', but my focus in this thesis on lantern-slides is foremost with Muybridge. [1372] Described by Marchessault as 'the consummate travelling showman,' Muybridge employed 'science to justify his erotic chronographs of veiled women, exotic animals, and deformed bodies.' [1373] He, Marchessault stated, exemplifies a later nineteenth-century popular culture of illusion in his experimental methods of sequence photography and chronophotography, and his methods more of a pseudo-scientific curio, or toy for grownups, than instrument of scientific demonstration.[1374] This, together with the fact that the Molténi firm of optical instrument makers that supplied the lantern and lanternist at the Société de

[1371] [The Morning Post (London, England), Monday, June 24, 1889; page 4; Issue 36511. 19th Century British Library Newspapers: Part II.]
[1372] Clayden was later Principal of the Royal Albert Memorial College, Exeter. He authored *Cloud Studies*, John Murray, London, 1905, pp. 200 and and author of *The History of Devonshire Scenery, An Essay in Geographical Evolution,* pp. 202.
[1373] J. Marchessault, Men in White, Women in Aprons, Utopian iconographies of TV doctors, 316 in A. B. Shteir and B. V. Lightman (Eds), *Figuring it Out Science, Gender and Visual Culture,* University Press of New England, 2006.
[1374] Marchessault, Men in White, Women in Aprons, Utopian iconographies of TV doctors, 316 in Shteir and Lightman (Eds), *Figuring it Out Science, Gender and Visual Culture*.

Géographie in Paris sold Muybridge's zoetrope strips of galloping horses from 1882, and in 1881 operated the projector at a demonstration soirée in Paris, suggests that parallels can be drawn between the concepts of 'travelling landscape-objects' and their human equivalents of 'go-betweens' that transcended often distinctly conceived realms.[1375]

The RGS model of soirées conforms to those described by Alberti, and in which an eclectic array of entertainments were displayed.[1376] Alberti concluded that these events constituted a 'throwback to the cabinet of curiosities from which Victorian museum professionals were seeking to depart'.[1377] Nevertheless, the RGS tradition of soirées continued until 1914. These findings evidence another facet of lantern-slides' role in mobilizing the Fellowship. This also engendered new geographical projections spaces, here in the liminal space of the soirée where a wider spectrum of knowledge makers was authorized to participate than at Evening Meetings. The harnessing of images, technologies and knowledge, as was the case in the earlier practices of magic and illusion, comprised an interstice that cut across socio-economic and gender categories. Such gatherings, nonetheless, though similar in many ways to fairs and popular entertainments staged at the RPI remained socially exclusive, with only access allowed to a limited strata based on professional background, socio-economic status and connections, age and gender.[1378]

Entertaining science

By 1894, after the debate over the admission of women, and following

[1375] Mannoni, *The Great Art of Light And Shadow*, 309; della Dora, Travelling landscape-objects; Schaffer, Roberts, Raj and Delbourgo (Eds), *The Brokered World.*
[1376] Alberti, Conversaziones, 211-213 and 219.
[1377] Alberti, Conversaziones, 215.
[1378] della Dora, Travelling landscape-objects, 335

Freshfield's resignation of his Honorary Secretaryship, the published discussions after Evening Meetings became shorter. Discussions were positively discouraged when Markham assumed the presidency from 1894. Alternatively, what we see in the published discussions in the *GJ,* may simply be Keltie's judicious editing of lengthier discussions where more detailed analysis continued to feature.

The discussion that followed Karl Grossmann's 1894 paper 'Across Iceland' showed this recurring motif in the RGS practices after 1893.[1379] Audience responses to lantern-slides evidence the projection of the concept of the picturesque on to images, both figurative and topographical. The photographs displayed provoked some of the most stirring reactions and comments from scientists amongst the Fellowship (Figure 32 & 33.). Sir Henry Howarth appreciated not only the photographs and '[…] the art with which a very great number of picturesque facts have been selected from a large number of observations.', indicating that scientific and artistic practices crossed in fieldwork as in Lévi-Strauss's vision of chiastic exchange.[1380] Thereby confirming the numerous studies that confirm the imbrication of art and science.[1381] As with Dunmore's paper, this suggests that the focus of meetings shifted. The entertainment and pleasurable, rather than scientific, value of papers and images were highlighted and collectively celebrated. Others expressed similar sentiments. Professor Judd was 'struck' with the photographs and described how 'our eyes have been feasted with such a display of the scenery of this wonderful

[1379] The paper was read at the RGS, January 29, 1894.
[1380] K. Grossmann, Across Iceland, *The GJ* 3 (4), (1894), 280; B. Wiseman, *Lévi-Strauss, Anthropology and Aesthetics*, Cambridge University Press, [2007], 2009.
[1381] Thomson, Photography and exploration, 669-675; C. A. Jones and P. Galison (Eds), *Picturing Science Producing Art*, Routledge, 1998; Ryan, Photography, visual revolutions and Victorian geography, 199-238; Wilder, *Photography and Science*.

country'.[1382] He looked forward to 'the full descriptions of these scenes, the wild beauty of which we cannot fail to remember.'[1383]

Figure 32. Lantern-slide (set 659) from Karl Grossmann, 'Across Iceland' lecture (RGS-IBG) Used with permission of the publisher.

[1382] Grossmann, Across Iceland, 280.
[1383] Grossmann, Across Iceland, 280.

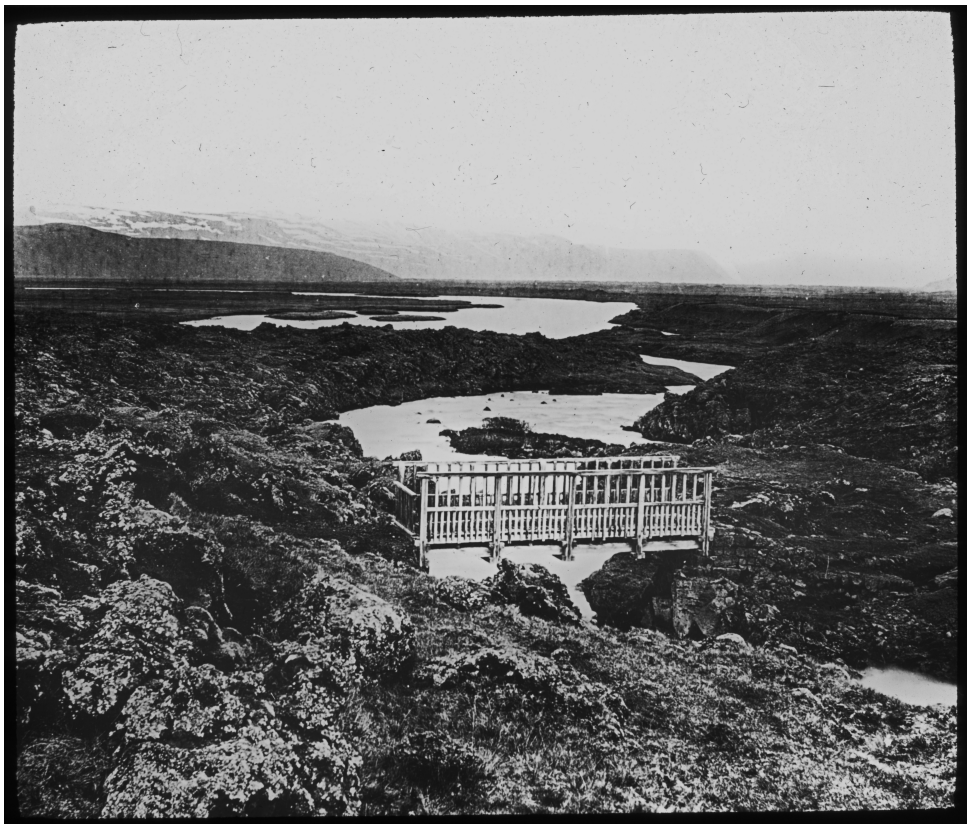


Figure 33. Lantern-slide (set 659) from Karl Grossmann, 'Across Iceland' lecture (RGS-IBG) Used with permission of the publisher.

Grossmann explained his belief in the objective and disembodied nature of photography; he had recourse to lantern-projected 'photographic views' in order to elucidate 'these facts as impartially as possible'.[1384] Geologist, Sir Archibald Geikie observed that there was 'little room … left for comment or criticism'.[1385] The speaker, he said, had not entered into 'scientific problems and some of his problems of explanations of the superficial features, might be open to question.' Significantly, in Geikie's opinion, it was precisely the lantern-projected photographs that provided 'a vivid picture of Icelandic scenery […] brought out clearly some of the salient

[1384] Grossmann, Across Iceland, 280-281.
[1385] A. Geikie, H. Howorth, Professor Judd, and Dr. Grossmann, Across Iceland: Discussion, *The GJ* 3 (4), (1894), 279.

features of Icelandic geology'.[1386] Grossman's photographs provided ample material for discussions 'on questions of scientific interest' and his 'pictures of the volcanic regions suggest many points on which we might ask for further information'.[1387] Geikie promised not to do this, but hoped that the 'illustrations of the peculiar topography of the island might be made the text for a long discourse.'[1388] Others present refrained from analysis to the regret of Sir Henry Howarth: 'It is very hard on some of us who love fighting, and who have had a fight already with Dr Grossmann elsewhere, that it is so late, because we might have had an interesting discussion to-night.' Yet he could not resist commenting on the 'remarkable' aspect of the pictures, 'namely, the extremely recent-looking surface of this great island'.[1389] The lack of discussion perturbed Dr. Grossmann; he could only 'therefore select a few striking features' to discuss and that he had endeavoured to set out 'by means of photographic views', leaving audience members to draw their own conclusions.[1390] Studies of oral performances of knowledge production, communication and authority therefore need to be complimented by studies of lantern-slides.[1391]

Together Markham as President and Keltie as editor rebranded the RGS meetings. This correlates with what we know of further aspects of Markham's presidency when, after the scandal and debate over the admission of women to the RGS, he re-emphasised the Society's support of

[1386] Geikie, A., Howorth, H., Judd, Professor and Grossmann, Dr., Across Iceland: discussion, 279.
[1387] Geikie, Howorth, Judd, Grossmann, Across Iceland: discussion, 279.
[1388] Grossmann, Across Iceland, 279.
[1389] Grossmann, Across Iceland, 280.
[1390] Grossmann, Across Iceland, 280-281.
[1391] Finnegan, Exeter-Hall science and evangelical rhetoric in mid-Victorian Britain, 46-64; Finnegan, Geographies of scientific speech in mid-Victorian Edinburgh in Livingstone and Withers (Eds), *Geographies of Nineteenth-Century Science*, 153-177.

exploration.[1392] It can also be seen in his nurturing of a specific strata of the Fellowship through the traditional dinners of the Geographical Club and Greenwich and Richmond outings.[1393] Yet Markham was pivotal in his simultaneous active promotion of geographical science and education and the communication of geography in a range of registers.

The most frequently stated effect of lantern-slide projection was that of collective and individual vicarious travel experiences. From 1873 John Thomson had argued that photographs afforded 'the nearest approach that can be made towards placing the reader actually before the scene which is represented.'[1394] The perceived mobility of the image referent, or of the audience imagination, emerges from RGS lecture transcripts across all types of lantern-slide lecture. Diverse images remediated in lantern-slide form, often when combined with other media such as maps and verbal knowledge, engendered the effect of virtual mobility of either audience imaginations or geographical features. Bringing distant topographical features to London was impossible. Although the translating of geographical features into words was challenging, if not impossible, the combination of large images – not only photographic lantern-slides - with words in the 'black-boxed' darkness of the lecture hall induced some audience members to suspend their disbelief and allow themselves to be transported to the places displayed or to new imagined spaces in their minds.[1395] Examples of this abound in the discussions. For example, Captain Wharton gave thanks

[1392] Stoddart, The RGS and the foundations of geography at Cambridge, 231; Jones, Measuring the world, 334.
[1393] RGS C. Markham, manuscript record of The Geographical Society, c.1900 with additions up to 1910, 446.
[1394] J. Thomson, *Illustrations of China*, [Introduction],1873 in Ryan, *Photography, Geography and Empire, 1840-1914*, 197.
[1395] Golinski, *Making Natural Knowledge, 29;* Clark and Doel, Engineering space and time: moving pictures and motionless trips, 41–60; Bissell, Visualising everyday geographies, 48-49.

'for the very pleasant evening he has given us, transporting us by means of his photographs to Iceland, and enabling us to realize the country in that way better than in any other.'[1396] Even Sir Archibald Geikie attested to having been on 'such a pleasing excursion through Iceland.'[1397] Whilst Professor Judd thanked the lecturer 'for taking us to Iceland for a short time, and in such a very pleasant manner.'[1398]

Geographical knowledge was transmitted and received via multiple sensory channels. The RGS expert audiences were emotionally and corporally stimulated as much as lay or novice audiences. The 'traveling landscape-object' theory frame thus pertains to individual audience members' experiences of static, imaginary travel.[1399] A tradition of expressing these visceral sensations prevailed at the Society and, arguably, these very effects were intentionally sought, and cultivated by the RGS. By emphasizing the three-dimensional materiality and 'object-hood' of landscape representations della Dora asserted that landscape-objects actively participate in 'intimate geographies of emotion.'[1400] In light of the foregoing audience comments the definition, and location, of 'intimacy' can be scrutinized since this study shows that at the RGS lantern-slides were made to participate by human actors in public and collective knowledge making performances. Emotional responses were expressed in those performances, but were not necessarily intimate either at the time of the event, or in its remediated published form in the commercially available *Proceedings* and *GJ*. The extent to which audiences consciously expressed emotional responses, and their motivations for doing so, is open to

[1396] Geikie, Howorth, Judd, Grossmann, Across Iceland: discussion, 281.
[1397] Geikie, Howorth, Judd, Grossmann, Across Iceland: discussion, 279.
[1398] Geikie, Howorth, Judd, Grossmann, Across Iceland: discussion, 280.
[1399] della Dora, Travelling landscape-objects, 351.
[1400] della Dora, Inverting perspective, 350.

conjecture. There is, nevertheless, a degree of agreement with the 'landscape-object' theory; lantern-slide lectures at the RGS were a locus that comprised both knowledge making and emotional responses. The two phenomena were not, as the subsequent chapters show, distinct to either the Evening or the Technical meetings. Indeed knowledge makers across these contexts expressed emotion before lantern-slide projections.

Della Dora theorized 'landscape-objects' as enabling 'travel through space and time.' [1401] The numerous historical audience responses to lantern-slide projections suggest that this was perceived to be the case in the geographical projections spaces. Allusions to experiences of 'virtual travel' of audience members or of the image referent are manifold. Lantern-slide projections were perceived as 'transport phenomena' bringing features of natural phenomena to the lecture spaces.[1402] As such they functioned as specimens, partial representatives that symbolically stood in for greater landscape features and historical and geographically-specific ideations of the processes of nature.

The focus of this section was the evolution of the RGS use of lantern-slides for entertainment purposes in the geographical projections spaces of Evening meetings. I have argued that in critiquing the earlier practices of knowledge communication and in their vigorous promotion of scientific visual methods such as photography to the Fellowship, the reformers also reinvigorated the tradition of exploration narratives. I assessed this in relation to the audience responses to the perceived effects of lantern-slide projections and instances of 'numinous materialities'.[1403] In outlining the significance of the geographical projections space I have

[1401] della Dora, Travelling landscape-objects, 351.
[1402] Schaffer, Transport phenomena, 71.
[1403] della Dora, Inverting perspective.

shown that the lantern-slide mediation of knowledge was, not only seen, but felt by audiences. Thus 'practitioners of science' such as Grossmann also performed the role of 'popularizers of science' in their verbal and visual communication of a sensational geographical knowledge with lantern-slides 'travelling landscape-objects'. [1404] Audience responses to lectures and lantern-slides are further assessed for evidence of embodied responses that transcend the mere visual experience.

The Technical Meetings and Evening Scientific lectures of Vaughan Cornish c. 1897- 1899

Amongst the physical scientists whose knowledge making practices were formulated via and around the lantern was Vaughan Cornish.[1405] Existing studies of the chemist-turned-geographer, Vaughan Cornish by Goudie, Matless, Dodds, and Macfarlane have demonstrated a fascination with Cornish's embodiment of modernity and twentieth-century nature-mysticism. [1406] This scholarship was dominated by Cornish's literary output. Matless concentrated on the resonance of Cornish's aesthetic writings from the 1930s and 1940s, acknowledging the influence of Ruskin and Bergsonian vitalist theory on Cornish.[1407] The numinous in Cornish's writings has also been discerned by Macfarlane. Cornish's vision, he stated, 'hovered partway between spirituality and hard

[1404] della Dora, Travelling landscape-objects, 287-306.
[1405] Rossell, Demolition d'un mur, 322.
[1406] K-J. Dodds, Eugenics, fantasies of empire and inverted whiggism, An essay on the political geography of Vaughan Cornish, *Political Geography* 13 (1), (January, 1994), 85-99; D. Matless, Nature, the Modern and the Mystic: Tales from Early Twentieth Century Geography, *Transactions of the Institute of British Geographers*, New Series 16 (3), (1991), 272-286; R. Macfarlane, *Wild Places,* Granta Publications, 2007, 248-251.
[1407] See V. Cornish, *Harmonies of Scenery, an outline of aesthetic geography*, Presidential address delivered to the Geographical Association, January 6th, 1928, at the London School of Economics, Newtown: The "Montgomoryshire Express," Ltd., pp.23; V. Cornish, *Poetic Impression of Natural Scenery*, Sifton Praed & Co., 1931; V. Cornish, *The Beauties of Scenery*, Frederick Muller Ltd, 1943.

science'.[1408] However, an assessment of Cornish as a practitioner of an aesthetic science, and of his actual visual output, and his harnessing of the 'travelling landscape-objects', largely remain a void in scholarly studies.[1409] Matless's review of Macfarlane's take on Cornish touched upon Cornish's enthusiastic and sensuous 'aesthetic geography'.[1410] In doing so he offered a sobering analysis of Cornish. By exposing the illusions that the harnessing of images and emotive tones could engender, Matless warned of the dangers of visions of the 'harmony' in nature. This line of reasoning, he wrote, could lead to submission and surrender as well as a lack of reflexivity in 'the easy formulation' of notions of the sublime and nature enchantment.[1411] These assertions are explored in below.

Within the context of knowledge making in which positivist methods of evidencing and photographic survey prevailed Cornish exemplified how the skillful harnessing of the visual imagination, images and aesthetics could lead an untrained enthusiast such to the status of practitioner of geographical science. Despite the many efforts to train travellers, assessed in Chapters 2 and 3, experiment remained vital to geographical practice. Cornish's lectures on waves and the sea also inform a wider stream of lectures on maritime subjects in the RGS Technical Meetings throughout the 1890s. These attest to the Society's, and specifically Markham's concern, with the maritime and naval subjects as the RGS began to set its sights on the South Polar expeditions, as seen in Chapter 2. Yet, as Chapter 4 showed, Cornish's interests were

[1408] Macfarlane, *Wild Places,* 250.
[1409] della Dora, Travelling landscape-objects. One exception is D. Matless, Nature voices, *Journal of Historical Geography* 35, (2009), 178-188.
[1410] Matless, Nature voices, 186-7.
[1411] Matless, Nature voices, 188.

indicative of a growing body of knowledge about geophysics that was visible in the lantern-slide index systems and the need to re-index them.

Cornish's first RGS paper was given at an afternoon Technical meeting. In preparing 'On the Formation of Sand-Dunes,' like many of his contemporaries, Cornish employed drawings and photographs produced by someone other than himself.[1412] Here the photographs of Egyptian sand dunes depicting scenes Cornish had not witnessed himself, came from a friend.[1413] As with other examples of photograph use demonstrated in this study, this suggests that faith in photographic objectivity was not fixed. Instead it was relative, its definition fluid and contingent upon perceived geographical factors. The question of lantern-slides featured in the pre-lecture correspondence between Cornish and Keltie. Cornish was keen for the audience to be provided with 'copies of the paper containing the printed diagrams' since he had not prepared diagrams or lantern-slides as he was concerned that the figures were essential to understanding his paper and considered that printed copies would 'be much the best for there would then be no waste of time with the lantern, and they would all be in hand at once for comparison and discussion.' (Figures 32 and 33)[1414] This attests to the performance of photography and photographic survey as a method of empirical fieldwork and positivist science as a means of substantiating arguments, theories and practices in the later 1890s. The increasing importance of making complex and little-understood natural phenomena visible via diagrams that were comprehensible to non-expert, untrained

[1412] Cornish corresponded with Keltie about the layout of the article, where the photos should come and the numbering of the figures in the article (p1). There was additional discussion of the proof and 'proposed alterations in red ink […] marginal corrections in black […]' (pp. 2-3) (RGS/CB7/23 Letter from Cornish to Keltie, Bournemouth Jun. 10th '96: 1- 3).
[1413] (RGS/CB7/23 Letter from Cornish to Mill, Bournemouth, Dec 27th 1896, page1; Cornish, On the formation of sand-dunes, 302.
[1414] RGS/CB7/23 Letter from Cornish to Keltie, Bournemouth, Jan 3 1897, pages 1- 2.

audiences, and the RGS's commitment to professionalizing and democratizing science is seen. However, also evident, is the novelty of, and perhaps resistance to, working in tandem with photography and the lantern.

FIG. 2.—WATER-FORMED RIPPLE MARK UNDER CURRENT ACTION, SHOWING STREAM-LINES.

Figure 34. Illustration of 'Water-formed ripple mark under current action, showing stream-lines' from Vaughan Cornish's 'On the Formation of Sand-Dunes' lecture, published in the *GJ* March 1897 (RGS-IBG) Used with permission of the publisher.

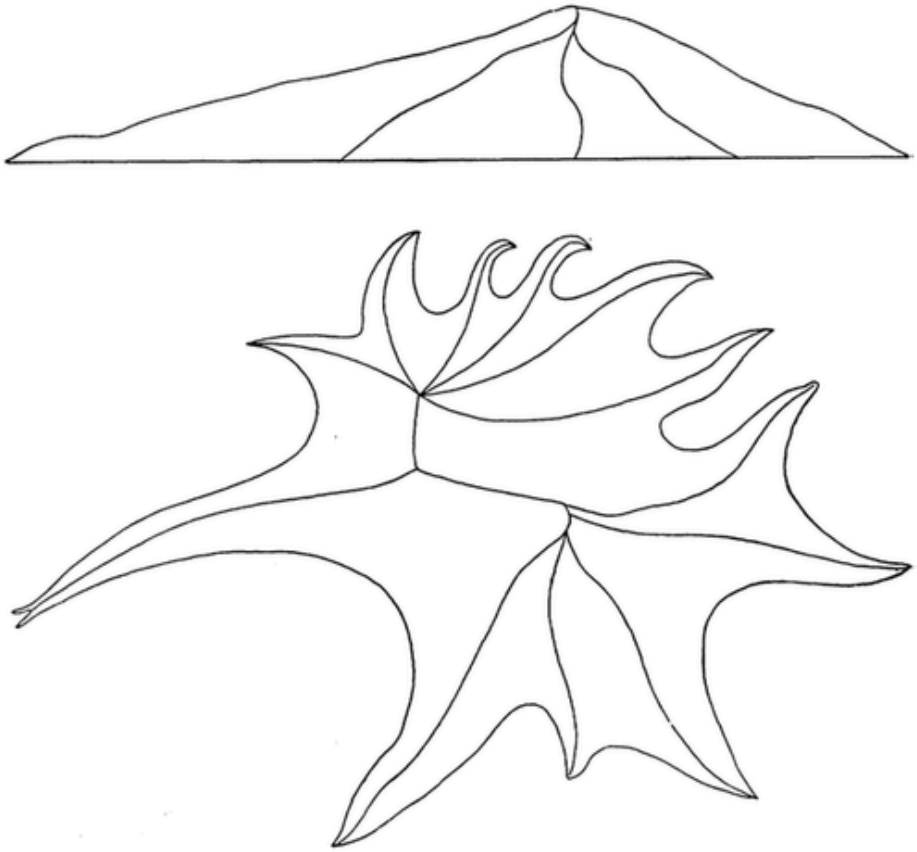


FIG. 14.—STATIONARY CONICAL DUNE OF THE SAHARA, HEIGHT 52 METRES.
(*After Schirmer.*)

Figure 35. Illustration of 'Stationary conical dune of the Sahara, eight 52 metres. (After Schirmer)', from Vaughan Cornish's 'On the Formation of Sand-Dunes' lecture, published in the *GJ* March 1897 (RGS-IBG) Used with permission of the publisher.

Such comments seem somewhat paradoxical given the claims that the lantern would render the Society's meetings more scientific. Here was a scientifically trained lecturer for whom the use of lantern-slides was accessory to the substance of the paper. Reading the papers in advance so as to come prepared with questions and contributions was one of the aims of having separate Technical meetings.

After rehearsing the lecture, Cornish planned to shorten it.[1415] This might be taken as further evidence of his lack of familiarity with slides and the then recent phenomena of their inclusion in lectures. This insight added

[1415] RGS/CB7/23 Letter from Cornish to Keltie Bournemouth Jan 3 1897, pages 2- 3.

credence to Macfarlane's view that Cornish wrote about sand 'with a lyrical intensity that remains moving to read.'[1416] Yet it also confirms Matless's discerning of the beguiling dangers of the numinous in nature since here the artifice of the construction of knowledge is visible.[1417] Cornish's emotive responses to natural phenomena such as waves and sand heightened his authority and the status of the knowledge that he presented in his lantern-slide lectures.

The post-lecture discussion was thought to be 'unusually exhaustive and interesting'.[1418] The audience reception shows that illustrations were all the more important, since the process of the formation of sand dunes not be witnessed or reproduced to temporal and spatial scale live within the Map Room. The difficulties of the subject matter were acknowledged by Cornish and by Professor Bonney who commented that he was glad 'that the author says how difficult it is to know where sand begins and pebbles end.'[1419] Here the discursive and dialectical nature of geographical knowledge production between individuals and the role of lantern-slides is visible in the manner of 'transport phenomena'.[1420]

Cornish's findings informed Mr. J. F. Blake's understanding of sand phenomena in Cutch.[1421] The President commented on 'the curious musical sound among the sand-dunes in the early morning' and remembered that Wood in Source of the Oxus related a long journey to visit some barchans emitting musical sounds. Captain McMahon ventured that there was 'a desert just north of the Helmund where there is said to be a curious sound

[1416] Macfarlane, *Wild Places,* 250.
[1417] Matless, Nature voices, 186-188; Schaffer, Transport phenomena.
[1418] President's comments in On the formation of Sand-Dunes: discussion Prof. Bonney, Prof. Hull, Mr. Whitaker, Prof. Seeley, Lord Belhaven, J. F. Blake, A. H. McMahon and Mr. Cornish, *The GJ* 9 (3), (Mar., 1897), 309.
[1419] On the formation of sand-dunes: discussion, 304.
[1420] Schaffer, Transport phenomena.
[1421] On the formation of sand-dunes: discussion, 305.

made by certain sand hills.' [1422] Such comments demonstrate the comparative method of knowledge making on a global, and imperial, scale as natural phenomena and features observed and visually recorded in one part of the world to understand those of other regions.

The discussion also reveals the concern with geophysical processes of chiastic exchange rather than with geography as the identification of location. Cornish intended to study snow and to treat sand-dunes as waves.[1423] This demonstrates Cornish's geographical imagination at work. It evidences the transcendental aspect of geography in providing a unifying comparative framework in which to situate the interacting phenomena of the natural world. We see too the transcendental aspect of the RGS lantern-slide lectures in which people, each with a personal stock of knowledge formed of images and words drawn from their experiences all over the world, came together to practise and produce science discursively.[1424] Cornish's later perspectives should therefore be situated in relation to his lecturing practices and the influence and knowledge of attendant audiences. The geographical projections space of the lantern-slide lecture became a chiastic site of interstice in which images in multiple forms, from the projected lantern-slide and the verbal images displayed fused.

No lantern-slide index card for this lecture has survived, but the published account was illustrated with over twenty-five diagrams, maps and two photographic reproductions.[1425] The comments described above show that perceived 'beauty' and the ensuing sensuous delight in the visual forms

[1422] On the formation of sand-dunes: discussion, 308.
[1423] Cornish's comments. On the formation of sand-dunes: discussion, 308.
[1424] Levine, Daring to know: Karl Pearson and the Romance of Science, 220-243 in Levine (Ed), *Dying to Know Scientific Epistemology and Narrative in Victorian England*; Trowbridge, Speakers concerning the earth': Ruskin's geology after 1860 in Clifford, Wadge, Warwick and Willis (Eds**)** *Repositioning Victorian Science.*
[1425] Cornish, On the formation of sand-dunes*,* 278-302.

of ‘nature’ or geography was not the preserve of Evening Meetings alone; audiences at Technical meetings were equally susceptible to aesthetics. The making of notionally scientific knowledge and natural phenomena attractive via illustrations was important since the latter conveyed the powerful numinous quality that attracted audiences. Several published audience responses demonstrate that individuals were moved by the projections. Mr. J.F. Blake ventured that ‘The longitudinal dunes owe their origin to a greater velocity of the wind than is ordinarily available, in a way beautifully shown in detail by the author.’[1426] Beyond the direct references to ‘beauty’ perceived in natural phenomenon, the discussion contains further descriptions of wind action upon sand that suggest Cornish’s sensitivity to the visual, and exposure to and observation of the dynamics of natural phenomena. This evidences the significance of the practice of observation and embodied experience and the importance of the training, indeed sensitization, of the eye, if not the whole body, to geographical phenomena.

Photography became a means, not only of capturing impressions of people and places, but also of bearing witness to work undertaken and disseminating knowledge.[1427] The higher frequency of geographical illustration and use of lantern-slides depicting photographic and other images for the purposes of evidencing, attests to the positivist faith instilled by lecturers in the photographic medium’s ability to convey geographical phenomena in a notionally truthful manner and, perhaps simultaneously, a degree of faith in the photographer if they were personally known. However, as the preparation of the lecture shows, the RGS staff had a hand in

[1426] On the formation of sand-dunes: discussion, 305.
[1427] Ryan, *Picturing Empire*; Ryan, Photography, visual revolutions and Victorian geography.

producing images for lectures illustrated by photographic and diagrammatic lantern-slides in Technical meetings.

We also see that although the RGS's Technical meetings supposedly offered the opportunity for more extensive scientific discourse, they were nevertheless the locus of aesthetic practices and expressions. These findings contradict the thesis of masculine, unemotional, hardened practitioners of science immune to sensual aesthetic pleasures.[1428] Arguably, these lectures formed a thinly-veiled nature worship suggesting experiences of the 'numinous materialities'.[1429] These can be located in the chiastically-imbricated outdoor field and in the indoor one of the geographical projections spaces. In Cornish's lectures it is also apparent that, despite the earlier celebration of photography's invaluable role in evidencing, the technology had severe restrictions in representing scale and perspective, as Ryan argued.[1430]

What also stands out is, firstly, that the display of such images provoked a response from the audience who of their own admission understood little of the science. The success of Cornish's lecture on a complex subject understood by few is clear. Furthermore, questions are raised about the origin, that is to say the locus, of the transcendental responses to the lantern-slide images; the edited published responses engender many questions regarding Cornish's eloquence and charisma. In turn, this raises questions regarding the locus of the pleasure for audiences, and the extent to which it was sited in the images to which they were exposed or derived from the process of learning and realization. The

[1428] Morus, Worlds of wonder, 815.
[1429] della Dora, Inverting Perspective Icons' performative geographies.
[1430] Ryan, Photography, visual revolutions and Victorian geography.

dangers of such enchanting illusions, discerned by Matless, are also evident.

In yet another example of the positivist faith attributed to photographs and visual evidencing, Cornish employed images made by others as a substitute proxy for witnessing and recording natural phenomena himself. In the lantern-slide lecture 'On Kumatology' Cornish introduced the new term of 'Kumatology' and outlined its preliminary definition. Kumatology, was derived from the Greek kuma (kumatos) that signified 'a wave'. [1431] Cornish appropriated it for the study of wave forms and wave-structures of the earth, which had hitherto been most focused on tides and earthquakes. The new term included:

> the waves and wave-structures of the atmosphere, hydrosphere, and lithosphere. […] They are but parts of a whole, but it is difficult for any one not a specialist to realize this, because the parts have familiar names, whilst the whole has no name. I think the time has come when it will be for the advantage of our science that there should be a distinctive word for the study of the waves and wave-structures of the Earth as a special branch of geography.[1432]

Cornish's visual methods of communicating knowledge and adapting it to diverse audiences reveal the extent to which knowledge circulated as 'travelling landscape-objects' through geographical projections spaces.[1433] Over the winter of 1898 Cornish conducted research into the dynamics of waves. He corresponded with the RGS librarian, Mill, writing that he was 'plodding on at sea waves and hope to make a decent paper of it some time, but it is more complicated than the rippling of sand etc because of the want of accord between the time of action of the wind and the duration of

[1431] Cornish, On kumatology, 624-626.
[1432] Cornish, On kumatology, 624.
[1433] della Dora, Travelling landscape-objects.

the resulting movements of water.'[1434] By then photographic recording of the research process and the subject of study, with a specific lantern-slide illustrated delivery and audience in mind, was integrated into Cornish's practices. The affective power of lantern-slides projected on a large-scale and in the darkness of the lecture theatre was critical in drawing people to the RGS meetings to hear and see papers in person instead of simply looking at the published images in the *GJ.*[1435] He intimated he had 'got some good photographs of the shore phenomena here lately & have had slides made from them by an excellent man whom I have found in Bournemouth'.[1436]

Cornish conceived of this paper as a spoken one structured around the display of images. He advised Keltie that his manuscript was 'the text of verbal delivery' [1437] and that 'the paper as I sent it is for reading, and is drawn up so as to make a success of an evening meeting as far as I can ensure it.' [1438] The lecture and its images were therefore conceived and written for a specific audience of an RGS Evening Meeting audience of non-experts. Cornish and Keltie adapted the paper title to make it more appealing to an Evening meeting audience. The inclusion of illustrations was crucial since by stating that there would be depictions of wave phenomena it would 'suggest to the people that there will be something to look at, so that peradventure they will come'.[1439] We can surmise that

[1434] RGS/ The Mill Collection Box 5/f Letter from Vaughan Cornish to Mill, dated Dec 5th (and 14.12.98), pages 3-4.
[1435] Edwards, *The Camera as Historian,* 237; Schaffer, Transport phenomena, 77.
[1436] RGS/ The Mill Collection Box 5/f Letter from Vaughan Cornish to Mill, dated Dec 5th [and 14.12.98, page 4.
[1437] RGS/CB7/23 Letter from Cornish to Keltie, Bournemouth, dated Feb 17th 1899, page 3.
[1438] RGS/CB7/23 Letter from Cornish to Keltie, Bournemouth, dated Feb 17th 1899, page 2.
[1439] RGS/CB7/23 Letter from Cornish to Keltie, Bournemouth, dated Feb 22nd 1899, page 2.

audiences came to see for themselves and for the pleasure of visual, as much as mental, stimulation provided by the projected lantern-slides.

It is useful here to discuss issues of visual knowledge reception. I understand these as interpretation via a process of inverted projection in the manner of that of 'numinous materialities' and fetishization, on the part of audiences.[1440] Here reception becomes a process of knowledge production. The audience who witnessed Cornish's lecture saw many more images than those who simply read the abstract published in the *GJ.* The slides were described as 'upwards of forty in number'.[1441] The *GJ* explained that the photographs were 'not merely for purposes of exposition and illustration, but also as evidence and record of the phenomena of kumatology, many of which are illusive and difficult to observe.' [1442] The combination of technologies of photography and the lantern-slides made from them served as a microscope to enlarge and make visible the near invisible in the manner of 'transport phenomena' and thereby undermining Armstrong's vision of the lantern.[1443] It also transported the process form the sea-shore to the RGS hall. Processes of vision and representation then were vital in making visible the geography and directionality of science in the late-nineteenth century. Visual media, first of the human eye or mind, and then of human-made technologies such as the camera brought into existence this new, hitherto unnamed, branch of science in the manner of 'transport

[1440] della Dora, Inverting perspective, 243.
[1441] Cornish, On kumatology, 626.
[1442] Cornish, On kumatology, 626.
[1443] Schaffer, Transport phenomena, 71-91; Armstrong, *Victorian Glassworlds: Glass Culture and the Imagination 1830–1880* in McDonagh, Introduction: Roundtable: *Victorian Glassworlds,* (2009), 98.

phenomena'.[1444] The seeing of the science came first before the knowing and the naming of it as 'kumatology'.

Across the hybrid geographical projections space expressions of delight, and experiences of virtual travel were common to the 'practitioners of science,' 'would-be professionalizers' and 'popularizers of science' coalescing within the Fellowship.[1445] Such audience responses of projected perceptions of the lantern-slide agency and ability to transport them or, conversely, to transport phenomena back to the lecture venue, exemplify how landscape-objects were seen to 'to exercise their own agency'.[1446]

The synthetic nature of kumatology's study of a range of waves and wave mechanisms 'of the atmosphere, hydrosphere, and lithosphere' was first explained by Cornish since he felt that these were 'difficult for any one not a specialist to realize'.[1447] He then proposed to illustrate what he meant 'by kumatology by showing and commenting on photographic lantern-slides'.[1448] Analogies and verbal imagery drawn from other sciences were used to describe the shapes and behaviour of waves captured by the camera:

> Mr. Cornish then illustrated from the lantern-slides the mounting up of a swell on entering shallow water, with steepening front and flattening of the back; the gradual diminution in size of waves in approaching a gently sloping shore; the perfect form of the breaker when an off-shore wind prevents the crest from falling prematurely; the network pattern of the foam; and the foam bridges between pairs of whirlpools of dark water, like the bright bridges of sunspots. In a

[1444] '[…] the whole has no name' (Cornish, On kumatology, 624); Schaffer, Transport phenomena, 75.
[1445] Schwartz, The geography lesson, 16-45; Ryan, Photography, visual revolutions and Victorian geography 229; Clark and Doel, Engineering space and time, 41-60; Schaffer, Transport phenomena, 71-91.Lightman, *Victorian Popularizers of Science,* 9-13.
[1446] della Dora, Travelling landscape-objects, 335.
[1447] Cornish, On kumatology, 624.
[1448] Cornish, On kumatology, 625.

> cascade, the foam network was seen drawn out as when a net is stretched.[1449]

Mill, then RGS librarian, admired Cornish's breaking of new ground. He positioned this new field of kumatology in relation to other emergent areas of research, limnology and speleology, and within the wider conception of geography at the time. Kumatology was:

> one of those generalizations which makes geography so distinctive as a science; it embraces not only air, water, and land, but the sand that drifts over the surface of the land. […] We can thus see that the wave-idea runs through the whole field of geography, from the upper limit of our atmosphere down to the inner core of the Earth.[1450]

Cornish was seen to make a theoretical contribution that responded to Galton's call in the BAAS meeting of 1872 for insights into the principles and relations of natural phenomena.[1451] Mill's aesthetic appreciation of the images was also apparent in his conclusion that 'The photograph of the crossing of two waves, strikes me as one of the most beautiful I have seen upon the screen.' (Figure 36.)[1452] The image is emblematic in the manner of an icon of the chiastic processes of exchange inherent within della Dora's theory of 'numinous materialities'[1453] It exemplifies the dialectical process of knowledge making between images and words, and between individual perspectives brought to light in this thesis.

[1449] Cornish, On kumatology, 626
[1450] On kumatology: discussion Wilson Barker and Captain Egerton, *The GJ*, 13 (6), (Jun., 1899), 627.
[1451] Galton, Transactions of the sections: Geography, 198-202.
[1452] On kumatology: discussion Wilson Barker and Captain Egerton, 627.
[1453] Vermeir, The magic of the magic lantern (1660–1700), 157; della Dora, Inverting Perspective, 239-246.

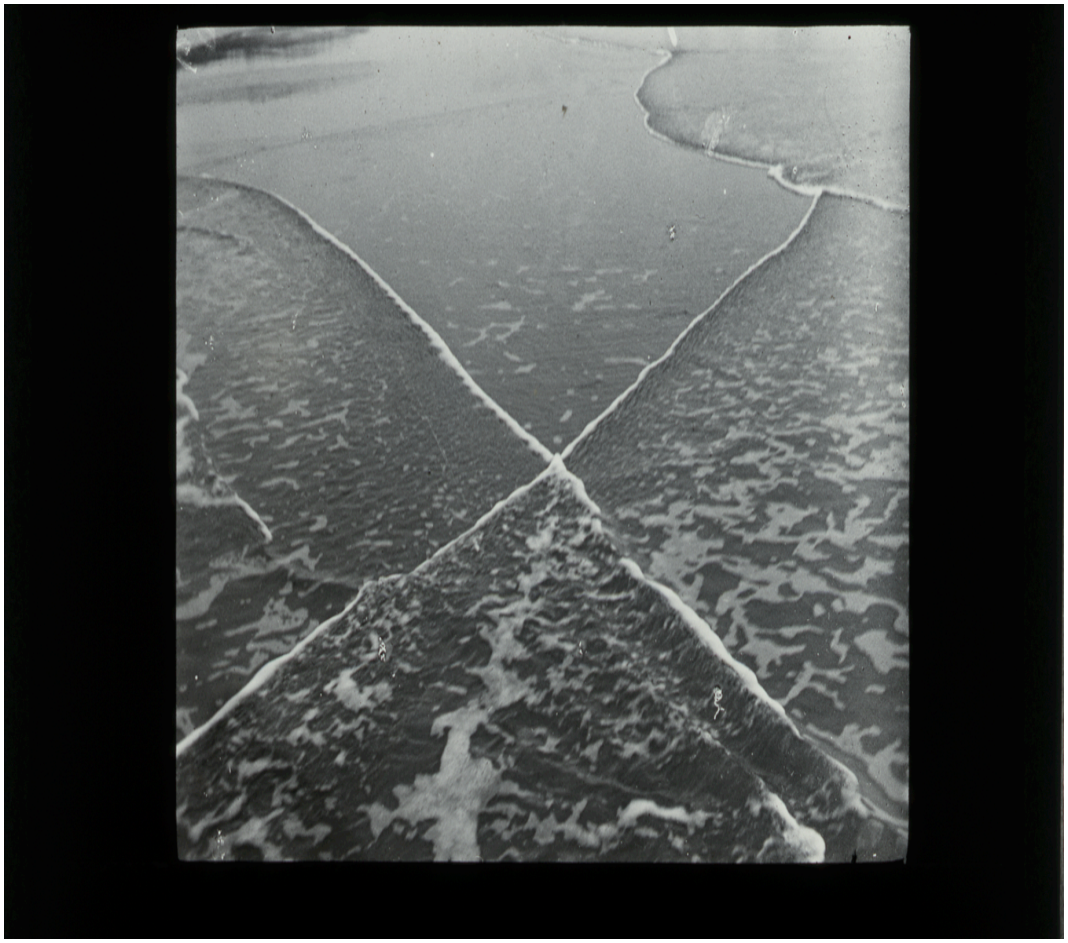


Figure 36. Photographic lantern-slide of 'Crossing Waves' by Vaughan Cornish, 'On kumatology' lecture, published in the *GJ* June 1899. (RGS-IBG) Used with permission of the publisher.

Thus the perceived value of aesthetic design in establishing and authorizing both knowledge and personal authority can be seen just as much within the lantern-slide display and consumption practices of the afternoon Technical meetings as within those of the Evening meetings of the RGS. Yet some audience members remained uncertain of the phenomena presented to them. [1454]

[1454] On kumatology: discussion, 628.

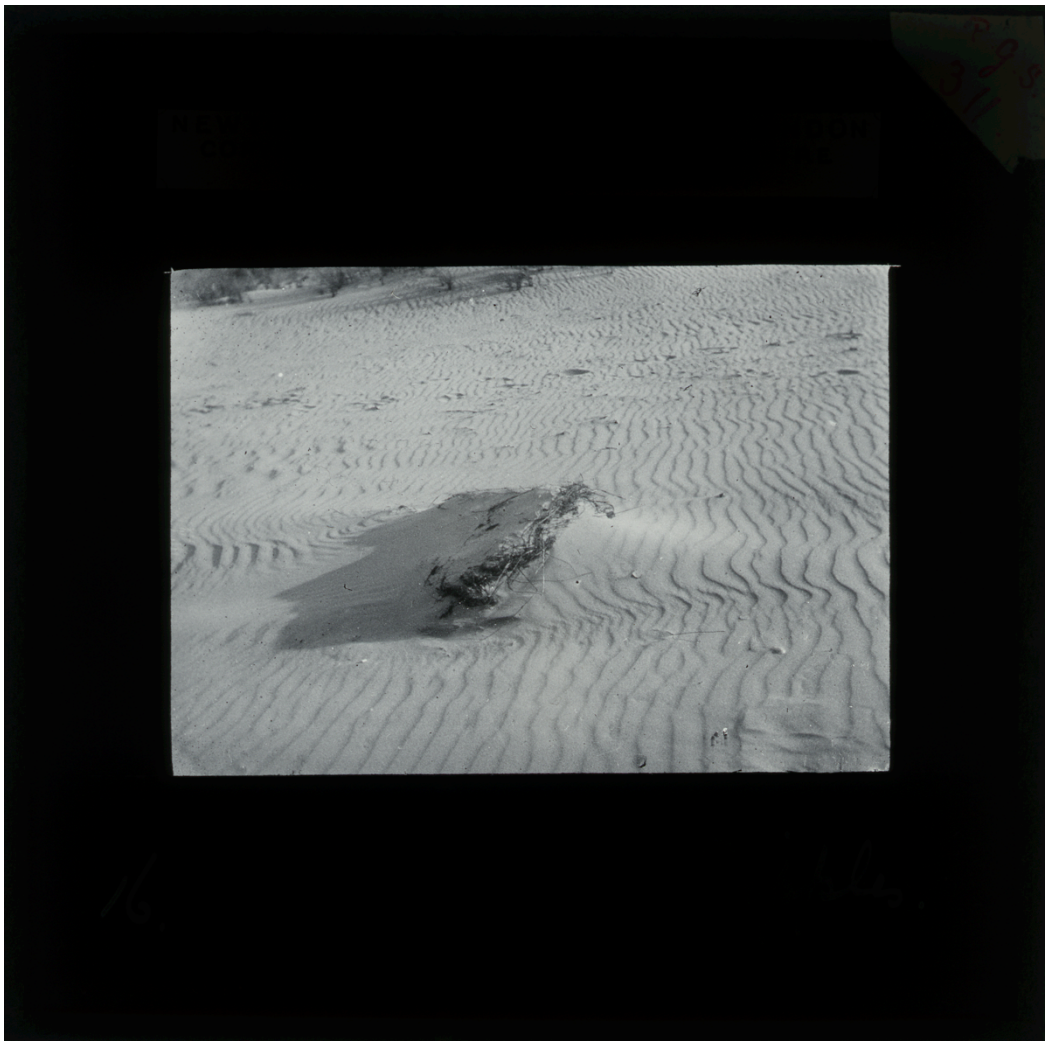


Figure 37. Photographic lantern-slide of 'Dry Sand rippled by wind' (sic) by Vaughan Cornish, 'On kumatology' lecture, published in the *GJ* June 1899. (RGS-IBG) Used with permission of the publisher.

In closing the meeting Markham was ecstatic. Cornish, he said, had delivered 'essentially an educational paper; it reminds us of how much there is of scientific interest in phenomena which are quite of every day familiarity.'[1455] He concluded with an image of phenomena closer to home:

> We cannot go out of our own doors without seeing objects of interest if we choose to think; even the worn-out flagstones before our areas give food for reflection, thought, and study. I should not be in the least surprised, when I go to study duck waves tomorrow in St. James's Park, to find many of my friends here this evening studying them also.[1456]

[1455] On kumatology: discussion, 628.
[1456] On kumatology: discussion, 628.

Adapting abstract geographical phenomena to scales and language familiar to non-expert Fellows was one of Markham's strengths.

Cornish's correspondence with Keltie and Mill is informative about the process of lantern-slide lecture production and the development of Cornish's geographical imagination. A chiastic process of constructing a lecture via the experiences in the field and geographical projections spaces, and the selection of images and creation of the lecture text is apparent, thereby exemplifying the chiastic nature of knowledge making posited by Lévi-Strauss.[1457] This was partly fostered by the Society itself and the audiences who applied the ideas and concepts presented by Cornish to natural phenomena in places of the world they knew.[1458] Furthermore, the published discussions suggest that the audiences were relatively small and often consisted of a few Fellows since the same names recur in Cornish's Technical meeting discussions. From them methods of comparative analysis of the physical geographical phenomena of sand dunes, waves and snow ripples, on an international scale, emerge. Since Cornish's research covered Britain, the Middle East, India and Canada and his studies of the behavior and patterns of nature in these countries fed back into one another in the manner of chiastic processes of transformation.

Although purportedly scientific, the subtle 'numinous' symbolism emerges from recorded perceptions of Cornish's images. Responses in both of Cornish's Technical and Evening Scientific meetings convey a sense of transcendent experience in witnessing lantern-side projections. Such effects are the locus of Cornish's authority rather than any innovative

[1457] Wiseman, Claude Lévi-Strauss, chiasmus and the ethnographic journey, Wiseman, *Lévi-Strauss, Anthropology and Aesthetics*.
[1458] On kumatology: discussion, 626-28.

contribution to understandings of the mechanical dynamics of nature. His skill was one of bringing aesthetic geographies to light via images so as to render visible their workings in the manner of 'transport phenomena'.[1459]

The geographical specificity of Cornish's interests are significant too. Literary, artistic and academic works have repeatedly conceived the sea-shore as a site of performance. As a transitive 'threshold space', a zone of intersection between environmental elements and a meeting point where these co-performed, the shore has drawn the attention of Denning and Edwards.[1460] 'beginnings and endings,' and 'frontiers and boundaries' were how Dening defined beaches, 'that delineated the transformative space of cultural contact'.[1461] In the physical phenomena of the site of the shore, Edwards saw similarities with engagements with photographs.[1462] Cornish was delegated to communicate, via pictures and words, the science of waves in an accessible fashion to a general audience within the geographical projections space of lectures. I understand the geographical projections spaces as a site of chiastic interstice where individuals coalesced, opinions were exchanged and knowledge was collectively produced dialectically around images and words that were proxies for abstract concepts.

In her analysis of the design by an emergent geographical consciousness on an early twentieth-century modernity, internationalism and socio-environmental relations, Bell stated that in *The Realm of Nature* (1891), Mill 'emphasized how, for the scientist, design in the natural universe was interpreted as an intricate series of physical processes, whilst

[1459] Schaffer, Transport phenomena, 71-91.
[1460] Mukherji (Ed) *Thinking on Thresholds*; Edwards, Making histories.
[1461] E. Edwards, Photography and the performance of history, Kronos 27, *Visual History* (November 2001), 8.
[1462] Edwards, Photography and the performance of history, 19.

the poet was gratified by its form and colour.'[1463] In exploring the production and reception of the geographical projections spaces of two of Cornish's lantern-slide lectures, situate Cornish's practices in relation to an emergent modern geographical consciousness mediated via lantern-slides lectures identified by Bell, Matless and Macfarlane. In the graphic representations of his ideas any distinction between science/process and poetics/form and colour dissolves. Moreover, according to Mill's definition, geography in its cartographic output, concerned with form and colour, comprise a poetic practice. Yet it was an aesthetic practice that was collectively produced since Keltie and other members of the RGS staff assisted with the adaptation of knowledge in the preparation of images for lectures.

Here Cornish's early aesthetic geographies and his first steps as a communicator of geography across the 1890s show that photography shaped his eye and his attention to an already apparent perception of the 'numinous' unity of nature. Later this would fuse more explicitly with strains of romanticism in his literary and visual expositions of his philosophy of nature-mysticism. [1464] Cornish was not a trained geographer. Thus in exploring Cornish as a practitioner and popularizer of geography a species of authority is apparent in the engendering of emotion by the scientific designs on, and of, nature.

Conclusion

[1463] H R Mill, *The Realm of Nature. An Outline of Physiography* John Murray, 1891, in M. Bell, Reshaping boundaries: international ethics and environmental consciousness in the early twentieth century, *Transactions of the British Institute of Geographers*, New Series 23, 151-175, 1998, 163.
[1464] Cornish, *Harmonies of Scenery, an outline of aesthetic geography;* Cornish, *Poetic Impression of Natural Scenery*; Cornish, *The Beauties of Scenery.*

This chapter argued that geographical science became a form of rational entertainment. In examining the lantern's role in constructing and authorizing definitions of objectivity in the nascent geographical science that developed in the RGS in the late 1880s and early 1890s, I have considered what constituted geographical objectivity, who defined it, and how it was evaluated. The significance of the RGS's authorization of images made by others than the speaker in lectures was also showcased. As well as the salons, the fluidity of knowledge communication and the multi-purpose role of lantern-slides can be seen in the Society's efforts to adapt the findings of scientific practitioners to the audiences of the Evening lectures. I have therefore added dimensions to the plurality of forms of authority at the time of lantern-slide use has previously been intuited by historical geographers.[1465]

The cases set out in this chapter demonstrated that some of geography's most influential and enduring practices and technologies, in this case the lantern, were actively employed at general knowledge making and communication sites such as the RPI. In illustrating the similar practices of science and entertainment, questions arise about what, and where, a geographical society was. In discussing the RPI lectures, and the RGS soirées, I have shown the mobility of geographical projections spaces and the RGS Fellowship and thus how they inform, and inform, 'travelling landscape-object' theory.[1466] This is important in extending the historical geographical map of the RGS. Additionally, in terms of the assemblage of multiple entertainments on display at soirées, the social mix and the provision of alcohol, these events were in manifold ways similar to the

[1465] Driver calls for work on lantern-slide performativity in relation to 'different sorts of authority and different sorts of lecture.' (Driver, On geography as a visual discipline, 229).
[1466] della Dora, Travelling landscape-objects, 351.

secular, if not religious, 'treats' and mixed programmes offered at the RPI. Only the location of such events differed significantly. Arguably, the lantern was therefore in the manner of an inversion, as much a toy as an instrument of science. The chapter also confirms the entertainment value of geographical subjects, images and models.[1467] Scientific practices, as well as constituting knowledge, was capitalized upon socially and financially by the RGS and other societies, via its sensational worth. The audiences' drawing of sensual experiences from their interactions with geographical projections and the models shown at soirées were as important as the contribution of new knowledge. The growing authority of science across all of these diverse sites and within geographical practices was dependent upon both phenomena.

From c.1893, after the debate over the admission of women, the lantern-slides seen in geographical projections spaces became the instrument by which the entertaining and pleasurable effects of travel, exploration and even more scientific geographical papers were publically highlighted. The perceived delight derived from these projections was two-fold. Audiences derived pleasure, firstly, from the aesthetic experience and the holistically sensual, rather than solely visual, ease of acquiring knowledge via images. The second important factor was the perception that lantern-slide images could produce a transcendental, or numinous, effect of temporarily transporting audiences outside of themselves. Thus the chiastic journey of fieldwork and knowledge making was not made solely by the lecturer or scientist.[1468] Nor did it end when they returned. Knowledge continued to travel and was co-produced by audiences at lectures. These

[1467] Mannoni, Nekes, Warner, *Eyes, Lies & Illusions, The Art of Deception*, 20.
[1468] Wiseman, *Lévi-Strauss, Anthropology and Aesthetics*.

aspects were mutually-constituting. From 1893 the scientific analysis of lantern-slides was downplayed, and the aesthetic qualities emphasized. The RGS geographical projections spaces of the 1880s and early 1890s can therefore be understood as an intersection of Fellows and their guests, explorers of the field and of the study, and a growing body of scientific practitioners and less expert audiences. The Society at this time attempted to promote science but also to adapt lectures to its diverse Fellowship. The RGS was thus a space of both instruction and entertainment, akin to a laboratory for the collective testing, synthesis and authorization or not of different practices, visual technologies but also individuals, ideas and images.[1469]

[1469] Galison, *Image and Logic: A Material Culture of Microphysics*, 553-559; L. Daston and P. Galison, (Eds) *Objectivity*, Zone Books, 2010.

CHAPTER 9. THE 'EDUCATIONAL LADDER' OF GEOGRAPHY[1470]

> Nothing interests children like travels; and nothing is dryer and less attractive in most schools than what is christened there with the name of Geography.[1471]

Introduction

Thus stated anarchist-geographer, Pietr Kropotkin, in 1885. The quote is indicative of a wider consciousness of the arid state of geographical affairs. Throughout the period with which this study is concerned the RGS both identified this failing in geography teaching and attempted to respond to it. The shifting use of the lantern, which had for centuries featured in Christmas entertainments for children, and which came to be a traditional children's Christmas toy across the nineteenth century, would change this state of affairs.[1472]

The RGS's engagement with the lantern, Chapter 5 explained, was initiated at a time when the Society was experimenting with ways in which to promote and establish geographical education and science in schools and universities. The RGS's engagement with education, exemplified in Keltie's Report on Geography Education in 1885 has received extensive historiographical attention.[1473] With the exception of Wise's research, this has been overshadowed by interest in the RGS's imperial and exploration history. Ryan's COVIC lantern-slide project study started to bridge the gap between histories of empire and education.[1474] Ploszajska and Maddrell

[1470] Lord Aberdare, *Proceedings of the RGS,* New Monthly Series 8 (2), (Feb., 1886), 121 .
[1471] P. Kropotkin, What geography ought to be, *The Nineteenth Century* 18, (1885), 940.
[1472] Martineau, *Autobiography*, Vol. 1, 15 in Secord, Botany on a plate, 51; Simkin, The magic lantern and the child in Crangle, Heard and van Dooren (Eds), Realms of Light, 28-29; Mannoni, *The Great Art of Light And Shadow,* 280.
[1473] Wise, The Scott Keltie Report 1885 and the Teaching of Geography in Great Britain, 367-382. However, still little is known about the RGS geography school medals (Stoddart, 'That Victorian science', 219). Clements Markham's teaching on the HMS Worcester and HMS Conway naval training ships is yet to be researched.
[1474] Ryan, Visualizing imperial geography, 157-76.

then extended this field.[1475] Yet the RGS's additional role as an educational establishment and impact of the Society's promotion of geographical education via its annual Young Person's Christmas lectures, constitute an unexplored facet of the Society. This chapter attempts to offer a corrective to this.

In tracking the course of lantern-slide 'travelling landscape-objects' through the Society's activities I first examine the context within which the RGS educational activities arose in the 1870s. I then consider the educational initiatives for young people by other British geographical societies. Turning to the RGS Young Person's Christmas lectures, I outline their development between 1892 and 1960, and concentrate on lectures by the Society staff between 1892 – 1905. Finally, I assess the delivery of Young Person's Christmas lectures by professional commercial lecturers. The examples assessed show how the Society nurtured 'an educational ladder,' that is an integrated educational system of geography teaching from primary up to higher education level.[1476]

The RGS educational engagements

At this point it is useful to recall that the initial objections to the lantern came from conservative RGS Council members, worried that it would negatively impact the Society's reputation.[1477] In view of this this thesis is significant in showing that just six years later the Society sought to further expand its

[1475] Maddrell, Empire, emigration and school geography: changing discourses of Imperial citizenship, 1880–1925; Ploszajska, *Geographical Education, Empire and Citizenship, 1870–1944*.
[1476] Lord Aberdare, *Proceedings of the RGS,* New Monthly Series 8 (2), (Feb., 1886), 121 .
[1477] Mill, *The Record*, 102.

audiences by introducing a new series of lantern-slide lectures for 'young people' in the winter of the 1892-93 RGS season.[1478]

Scholars have argued that across the nineteenth century the structure of knowledge took on a new and recognizably modern form as the disciplines that we now take for granted emerged.[1479] The methods by which knowledge was tested also changed, with oral examinations and personal contacts giving way to formal written tests such as those held at the South Kensington School of Science and Arts where Thomas Huxley taught physiography.[1480] New institutions of knowledge were created; museums collected and classified material forms of knowledge at the start of the period, but towards the end of the century universities came to prominence.[1481] Both settings shared a common practice of knowledge demonstrations in their multimedia performances such as lantern-slide lectures.[1482] This can then be understood as the continuation of the earliest uses of the lantern, located as it was, in Vermeir's view, 'between educated, popular and courtly cultures,'[1483] and in which the lantern had 'a place in collections, demonstration lectures and texts'.[1484] Critical to this study is also Vermier's underlining of the function of the lantern in propagandizing.[1485]

[1478] 'The Christmas Lectures to Young People.' Geographical Notes, *Proceedings of the RGS*, New Monthly Series 14 (12), (Dec., 1892), 854.
[1479] Stoddart, The RGS and the 'New Geography'; Livingstone, *The Geographical Tradition*; Withers, and Mayhew, Rethinking 'disciplinary' history, 11-29; Mayhew pertinently questions the 'modernity' of the new 'modern' geography from 1887 onwards. Driver, Hidden histories made visible?.
[1480] Stoddart , 'That Victorian science', 40.
[1481] Driver, Hidden histories made visible?, 420–435.
[1482] Driver, Hidden histories made visible?, 420–435.
[1483] K. Vermeir, The magic of the magic lantern (1660–1700): on analogical demonstration and the visualization of the invisible, June 2005, 127–159.
[1484] Vermeir, The magic of the magic lantern (1660–1700), 127–159.
[1485] Vermeir, The magic of the magic lantern (1660–1700), 158.

It was within the broader landscape outlined above that lantern-slides found usage by commercial lecturers, scientists and travellers of both sexes for the dissemination of knowledge to children and young audiences across a range of discourses and locations.[1486] Prior to the commencement of the RGS Young Person's lecture series in 1892-3, similar educational entertainments had for some time featured at a number of other prominent London scientific and cultural institutions. As well as scientific societies and cultural institutions favored by royal patronage, commercial entertainment centres such as the RPI, discussed in Chapter 8, featured performances on geographical themes for younger audiences.[1487] A range of knowledge was communicated across these different spaces, to diverse age groups and for often intersecting purposes varying from the improvement of morals, the benefit of the national and imperial good, and the capitalizing on new consumer groups.

Foremost amongst the learned societies to engage in lantern-slide lectures for children in London was the RI. From 1825 Michael Faraday arranged Christmas lectures for children at the Institute.[1488] Given the close connections between the RGS and the RI across 1868-1870 alluded to previously, the RGS must have been aware of the Institute's decision to cultivate this section of the population. However, amongst the other progressive societies with which the RGS had close dealings was the Society of Arts (SA). Indeed the SA also set an important precedent. It was there that natural scientist, Professor H. N. Moseley of the 1872 – 76

[1486] A. Secord, Botany on a plate, pleasure and the power of pictures in promoting early nineteenth-century knowledge, *Isis* 93 (1), (March 2002), 28-57 Lightman, *Victorian Popularizers of Science*, 95-165; Kember, Plunkett and Sullivan (Eds), *Popular Exhibitions, Science and Showmanship, 1840-1910.*

[1487] Brooker, *The Temple of Minerva Magic and The Magic Lantern At The Royal Polytechnic Institution, London 1837 – 1901,* The Magic Lantern Society, 2013, 34- 36.

[1488] Altick, *The Shows of London*, 368; Vogl-Bienek and Crangle (Eds), *Screen Culture and the Social Questions 1880-1914*.

Challenger expedition, and supporter of geography education, employed the lantern in his 'Juvenile lectures' on 'The Inhabitants of The Ocean' in the 1883 Christmas holidays.[1489] The first lecture dealt with 'life on the surface of the ocean', and the second with 'life on the bottom of the sea' and both were 'fully illustrated by a very fine series of lantern-slides of the different animals described.'[1490] Moseley had gained public recognition through his botanical work during the *Challenger* expedition, and in which photography had been an important scientific instrument.[1491] Having studied natural science in Vienna and Leipzig as well as at Oxford, by 1883 he had been appointed the Linacre Professor of Human and Comparative Anatomy at the University of Oxford.[1492] An RGS Fellow since 1881, Moseley was also a member of the Society's Council and a notable supporter of geographical education and science.[1493] This is seen in his lecturing 'On the Scientific Aspects of Geographical Education' in conjunction with the Keltie Report on Education and the Exhibition of Educational Appliances in 1886. He was a significant advocate of a liberal education on a German and Austrian model that would privilege physical geography.[1494] Moseley was important to the RGS and the history of geography in additional ways, most especially through his still little-apprehended influence upon Halford Mackinder, whom he taught and mentored as an Oxford undergraduate and student of natural

1489 Anonymous, *The Journal of the Society of Arts* 31 (1573), (1883), 159; Anonymous, *The Journal of the Society of Arts* 31(1597), (June 29, 1883), 798.
1490 *The Journal of the Society of Arts* 31 (1597), (June 29, 1883), 798.
1491 H. C. Rawlinson, 1875 – 1876 'Address to the Royal Geographical Society', *Proceeings of the RGS of London* 20 *(5),* (1876), 409-410.
1492 Wise, The Scott Keltie Report 1885 and the Teaching of Geography in Great Britain, 380.
1493 Wise, The Scott Keltie Report 1885 and the Teaching of Geography in Great Britain, 371.
1494 Wise, The Scott Keltie Report 1885 and the Teaching of Geography in Great Britain, 380.

sciences.[1495] This is noteworthy since Moseley may have been a decisive influence in Mackinder's appointment as the first Reader in Geography at Oxford in 1887.[1496] This, together with Moseley's use of lantern-slides at the SA suggests that further research into the lecturing and teaching methods of Moseley, and his Oxford Museum colleague, anthropologist Edward Burnett Tylor, might yield rich insights into geography's historical teaching and visual practices.

The RGS extra-mural lantern-slide lectures

The RGS sponsorship of adult education beyond universities has barely been explored.[1497] This is, doubtless, due to erstwhile internal academic bias about the most important locations of geographical knowledge production and the emergence of a concern with notionally 'popular' education in the final decades of the twentieth century.[1498] It is important to consider how the RGS's various lecture series shaped the contents and contours of the lantern-slide collections; glass slides that were frequently projected and transported around the country were liable to break. Mackinder lectured with a lantern on the OUE scheme from 1886 and, from October 1887 and supported by the RGS, at Oxford University.[1499] By 1889, he was also set to deliver a course of four lectures to audiences of teachers

[1495] B. Blouet, *Halford Mackinder a biography*, Texas A & M University Press, College Station, [1987], 2010, 23-25.
[1496] Wise, The Scott Keltie Report 1885 and the Teaching of Geography in Great Britain, 380; G. Kearns, *Geopolitics and empire: the legacy of Halford Mackinder,* OUP, 2009.
[1497] Ryan gave a brief summary of the Instruction in Photography and Anthropology (J. R. Ryan, *Picturing Empire*) and Collier and Inkpen, The RGS, exploration and empire and the contested nature of surveying; Jones has also made references to the courses offered by the Society, but no study has focused in these courses (Jones, Measuring the world).
[1498] Altick, *The Shows of London;* Bennett, 'Popular Culture: defining our terms' in Block 1 of the Open University course U 203 book, *Popular Culture: Themes and Issues*, 1, 86 in MacKenzie, *Imperialism and popular culture*.
[1499] The absence of many lantern-slide sets associated with the 1893 – 1903 afternoon Technical lectures and Evening scientific lectures may also have been a function of the synchronicity of Mackinder and Mill's Oxford and London University Extension lectures.

in London on 'the Teaching of Geography, at the College of Preceptors in Bloomsbury Square, at which there has been an average attendance of nearly 400 teachers, male and female, from Public, High, and Elementary School.'[1500] In this way the 'geographical ladder' envisioned by Aberdare was growing and lantern-slides remained instrumental in spurring its growth.[1501]

From July 1892 the RGS arranged a series of Educational Lectures by Mackinder for January 1893.[1502] Held at the London Institution in Finsbury Circus, these Educational Lectures actually began in October 1893, with a course of twelve lectures by Mill, but from 'early' 1894 Mackinder was scheduled to deliver them.[1503] If substantial funds had been devolved to producing and purchasing lantern-slides between 1887 and 1893 and towards printing publicity materials associated with the Educational Lectures in 1893, with overspending in this regard, then perhaps post-1893 there was a conscious decision to reduce lantern-slides made and purchased.

The 'acquisition and dissemination of knowledge', declared RGS President Sir Mountstuart Elphinstone in 1891 were the two great causes of the Society.[1504] This expansionist project that sought to render the RGS more socially inclusive and to demonstrate the public utility of geography in the 1890s is evident. In fact these two ambitions were co-dependent. With the new educational initiative of Educational lectures there came not only

[1500] Geographical Notes, Geography at Oxford', *Proceedings of the RGS*, New Monthly Series 11 (12), (Dec., 1889), 737-38.
[1501] Lord Aberdare, *Proceedings of the RGS,* New Monthly Series 8 (2), (Feb., 1886), 121 .
[1502] RGS Committee Minute Books, Executive Committee for Educational Lectures meeting, July 4 1892, 61. Across 1897-98 Mackinder also lectured at Gresham College in London [RGS Committee Minute Book January 1891 - June 1897, Meeting March 11 1897, 385-6].
[1503] RGS Mill, H.R., [Syllabuses of university extension lectures and other courses of lectures given by Dr. H.R. Mill between 1891 and 1897, (rgs325905/ MGX.872.1)], 1-2.
[1504] Sir Mountstuart Elphinstone in Jones, *Measuring the world*, 324.

the desire to communicate geography to new communities, but also to welcome them into the RGS' Savile Row house. The publicity sheet for the Educational Lectures stated that the lectures 'intended to help Teachers in grasping the principles of the Geography of the British Empire' and specified that Mill's experience with the Oxford and Cambridge Board would enable him 'to offer practical suggestions for the **improvement of Geographical teaching.**' [sic].[1505]

The lectures were intentionally 'popular in style, scientific in plan'.[1506] It was hoped that the new departure would 'meet the want that has frequently been expressed of authoritative geographical instruction adapted to popular needs.'[1507] The reference to the term 'popular' may have implied the use of the lantern. Here it certainly suggests that a notionally 'popular' aesthetic was not incompatible with 'scientific' subject matter. Students were advised to apply to the RGS or the London Institution for a list of books associated with the course.[1508]

The RGS' ambition of improving geography education and targeting of merchants and teachers in this way was reflected in the desire, at least of some members of Council, to make the RGS house available to new audiences too. Freshfield, for instance, advised Mill that when the Society installed electric light they might also invest in reading tables for

[1505] In addition to Mill and Mackinder, Keltie lectured around the country, notably at Newcastle (possibly at the geographical society there), in 1891 and may therefore have taken slides with him. (RGS/HRM 3 Keltie 1887 – 1926, Letter from Keltie to Mill dated 1 March 91, page 1).
[1506] RGS Mill, H.R., [Syllabuses of university extension lectures and other courses of lectures given by Dr. H.R. Mill between 1891 and 1897, (rgs325905/ MGX.872.1)], page 1.
[1507] RGS Mill, H.R., [Syllabuses of university extension lectures and other courses of lectures given by Dr. H.R. Mill between 1891 and 1897, (rgs325905/ MGX.872.1)], page 2).
[1508] RGS Mill, H.R., [Syllabuses of university extension lectures and other courses of lectures given by Dr. H.R. Mill between 1891 and 1897, (rgs325905/ MGX.872.1)], 1.

students.[1509] Such changes to the physical structure of the RGS Savile Row house and its furnishings arose as the Society's purposes changed. The transformations to the Fellowship were reflected in the decision to make further necessary alterations and create 'more space for the Library, greater conveniences for work, and more comfortable accommodation for the Fellows.'[1510] Just who came to Savile Row to use the books and collections, in the 'threshold space' of the Map Room, and to what extent female students or teachers were amongst those non-Fellows who did is uncertain.[1511] So too is the impact of this decision to admit a wider circle into the RGS house and the possible schismogenesis that ensued from it upon the scandal of the admission of women in 1892-93.

The Manchester Geographical Society's Victorians

Educational initiatives did not only arise in London. In the same year that the RGS Young Person's lectures began, the Manchester Geographical Society's dynamic inner quorum of 'youthful enthusiasts,'[1512] known as The Victorians, initiated its own Christmas lectures.[1513] As Markham explained:

[1509] RGS/HRM 3 Mill 1892 – 1932, Letter from Freshfield to Mill, Fairwater, dated 11 April [Year not specified, but c. 1893-4, as it is on black edged paper suggesting that it was written just after Freshfield's son, Henry, had died in 1892, as Freshfield's other correspondence of these years was.], 2-3.

[1510] RGS Committee Minute Books, House Committee meeting June 22 1894, Memorandum on the alterations to be made during the recess, 202-3.

[1511] Mukherji (Ed) *Thinking on Thresholds, The Poetics of Transitive Spaces*, 2013.

[1512] C. R., Markham, The field of geography, *The GJ* 11 (1), (Jn, 1898), 13.

[1513] 'Another manifestation of this social side is recorded in the *Journal* for 1892 which describes the Christmas party organized for members' children by the Victorians. The account recaptures the scene quite vividly: 'Lantern views of localities in various parts of the world and some other slides were shown to the great delight of the young people. Games and little romps diversified the evening.' Here we have the indelible pen of Eli Sowerbutts. One wonders what the other slides were, as it seems probable from a search through the Society's 'miscellaneous' drawers, that they were of incidents in popular Victorian ballads such as 'Sally in our alley' or from Dickensian novels like *The Old Curiosity Shop* posed by live models and coloured by hand.' Leslie Brown, Theodore Nigel, *The History of the Manchester Geographical Society, 1884-1950*, Manchester University Press, 1971, 31.

> The professor might also train young geographers who, in their spare time, would become propagandists. The Manchester Geographical Society has long had a body of such youthful enthusiasts affiliated to it, who are called "Victorians." Well trained in the geographical subjects they undertake to propagate, they go forth to the towns and villages of Lancashire with lanterns and slides, and impart their own enthusiasm far and near. Through their means schoolmasters are indoctrinated with correct principles, and boys imbued with the geographical instinct, even in the most distant villages and the humblest positions, become known, and may have chances opened to them. The system of thus sending forth these geographical knights-errant has succeeded beyond expectation.[1514]

The striking analogy of medieval chivalry, typical of its time, reflects the mythologizing of geography. The quote is, moreover, notable in overtly recognizing the employment of the lantern for propagandizing and indoctrination. This imparting of the 'geographical instinct' for the purposes of promoting secular science closely resembled the techniques employed by Christian and temperance movement such as the Band of Hope.[1515] It also raises questions about the purpose of such a geography, and its relationship to empire and social reform. Markham's quote therefore suggests that geography teaching could be understood as a cult of enchantment. With the lantern at its centre employed to project the 'travelling landscape-objects' of lantern-slides children were attracted to 'numinous materialities'.[1516] Thus recruits, individually and collectively, became 'travelling landscape-objects' engendering further transformations.[1517]

[1514] Markham, The field of geography, 13.
[1515] Crangle and Heard, The temperance phantasmagoria in Crangle, Heard and van Dooren (Eds), *Realms of Light,* 46-55; M. Loiperdinger, The social impact of screen culture 1880-1914 in Vogl-Bienek and Crangle (Eds), *Screen Culture and the Social Questions 1880-1914,* 11; A-M. McAllister "to assist in the pictorial teaching of temperance", in Vogl-Bienek and Crangle (Eds), *Screen Culture and the Social Questions 1880-1914*, 127.
[1516] della Dora, Travelling landscape-objects; della Dora, Inverting perspective.
[1517] della Dora, Travelling landscape-objects.

Markham has hitherto suffered from a degree of academic bias, particularly over his opposition to the admission of women.[1518] He has, in some respects, been overlooked, but also caricatured as a reactionary, misogynist, imperialist, amateur enthusiast and has been made somewhat of a scape-goat for the tragic conclusion of the South Pole Terra Nova expedition 1910 - 1913.[1519] Indeed Jones alluded to Markham's 'obsession' with Antarctic exploration.[1520] This study affords glimpses of alternative facets of Markham's complex character and the critical contributions he made to the fashioning of the RGS and the epistemology of geography. His reputation as a conservative force within RGS affairs was not unwarranted. Yet the longer legacy of his personal character, global upbringing, professional service in the Royal Navy and in the India Office's Survey of India, and influence on the Society through his support of geography education, science and communication, seen above, requires urgent re-assessment.[1521] His devotion to the RGS and empathy with the desires of substantial tracts of the Fellowship, were critical in maintaining the Society on an even keel following its destabilization over the question of the admission of women, and in enhancing the authority of the Society amongst other geographical societies and in public life more generally.

The reasons for this synchronicity between the two societies' children's lectures are uncertain. However, it is recorded that the RGS series started in an ad hoc fashion since it was never officially authorized or

[1518] Mill, *The Record*; Driver, *Geography Militant:* Wise described Markham as 'a gradualist' (M. Wise, The Scott Keltie Report 1885 and the teaching of geography in Great Britain, *The GJ* 152 (3), (1986), 369.
[1519] Mill, *The Record*; E. A, Reeves, *Recollections of A Geographer,* Seeley, Service and Co London, 1933; D. Stoddart, The RGS and the foundations of geography at Cambridge, *Geographical Journal* 141, (1975), 231; Jones, Measuring the world, 334.
[1520] Jones, Measuring the world, 334.
[1521] Death of Sir Clements Markham, *The GJ* 47 (3), (Mar., 1916), 161-176.

planned by the Council.[1522] These lectures were one of several ways in which the RGS promoted education at this time. By late 1892, Mr. Bentham Dickenson of Rugby school had written to the Society to request assistance with slides and photographs to illustrate on Physical Geography.[1523] From this connection between the RGS and Dickenson, the loose network of geography teachers who wished to see better and more visual teaching aids, such as lantern-slides, evolved into the GA.[1524]

Evidence of this greater concern with education is also seen in the *GJ,* which in 1893 carried articles such as 'On the Teaching of Geography' by Kropotkin, an assessment of the state of geography teaching in the UK from primary to school to university level. In comparing British geography education with that of Germany, Kropotkin criticized the dearth of affordable 'truly scientific popular literature' as one factor holding back the discipline in the U.K..[1525] As seen in Chapter 5 Kropotkin was a supporter of the Société de Géographie's educational efforts. Consequently, he brought transnational insights to his observations. Longer term, these measures, in conjunction with others discussed in earlier chapters such as the founding of the Oxford University readership in 1887 and the RGS Evening and Technical lantern-slide lectures, strengthened the dominion of British geography. As Keltie later acknowledged, new teaching materials played a part in this. 'The old dull text-books, Keltie assured, 'and featureless maps have almost disappeared, and others modelled on the reformed conception of the subject have taken their place. Other appliances, unknown here

[1522] 'I do not think the Council ever sanctioned the Christmas lectures. You asked me, and I said that I saw no objection provided that they did not cost the Society anything. [(CB7, Sir C.R. Markham 1881 -1900) Box (of 3), Markham to Keltie, 14 Jan 1898, 1].
[1523] RGS Committee Minute Books, Scientific Purposes and Education Committee, December 1st 1892, 70.
[1524] Balchin, *The Geographical Association*; Mill, *An Autobiography*, 106.
[1525] P. Kropotkin, On the teaching of geography, *The GJ* 2 (4), (1893), 358.

before, photographs, slides, models, simple instruments, have been introduced, and in many cases the pupils are taken into the field for practical work.' [1526] These transformations were further steps on the extending 'geographical ladder'.[1527]

The RGS Young Person's Christmas lectures

The Young Person's Christmas lecture series began in 1892 during the 'transitive space' after Christmas and in the early new year, a traditional time at which entertainments for children were offered by religious groups in the form of nativity plays and carol singing concerts and by the entertainment sector in the form of pantomimes.[1528] The staging of these lectures around lantern projections constitutes a further instance of how lantern-slides conform to 'travelling landscape-objects' theory as circulating place, here those of scientific and entertainment practices, by metamorphosizing and opening up spaces. [1529] By undertaking to enculturate a future generation of travellers, explorers and geographers the Society displayed its desire to project itself and geography into the future. This can be understood as a 'geography of anticipation' and evidences the dissemination of social evolutionary theory and a belief that geography could contribute to a notional social progress.[1530] If, initially, the first lecture was somewhat spontaneously conceived and a staff member, John Coles, appointed to speak during the winter vacation 1892-3, then eventually considerable time and thought on the part of the secretaries were devolved

[1526] Keltie, Thirty years' work of the Royal Geographical Society, 364.
[1527] Lord Aberdare, *Proceedings of the RGS,* New Monthly Series 8 (2), (Feb., 1886), 121 .
[1528] Mukherji (Ed), *Thinking On Thresholds, The Poetics of Transitive Spaces*; See Propagandizing for commercial and religious purposes via lantern shows is discussed in Humphries and Lear, *Victorian Britain Through The Magic Lantern*, 31-45 and 121-145.
[1529] della Dora, Travelling landscape-objects, 335
[1530] C. DeSilvey, Making sense of transience: an anticipatory history, *Cultural Geographies* 19 (1), 2012, 31–54.

towards scheduling and planning the speakers and venues.[1531] This series rapidly formalized into an annual fixture. First, Keltie, between 1893 and 1915, then Hinks following in his wake as Secretary from 1915 were responsible for scheduling the lectures.[1532] By 1906 the series was so popular that the Society scheduled multiple lectures. These were advertised in advance in the December issues of the *GJ*. Fellows could apply to the RGS clerks for tickets.[1533] (Figure 38.)

Throughout the first decade of the twentieth century many commercial lecturers, active on the extensive commercial lecturing circuit, wrote to the RGS, advertising their individual aptitudes in pamphlets, heavily illustrated and often printed in colour thanks to innovations in print technology. (Figures 39 and 40). In the 1906-07 session, after Markham's retirement in 1905, women were permitted to lecture to audiences of children. This occurred before the full admission of women as Fellows to the RGS in 1913.[1534]

[1531] This was the case from the first lecture by John Coles in 1893. *Proceedings of the RGS,* New Monthly Series 14 (12), (Dec., 1892), 854.
[1532] Though there was an overlap between the two Secretaries between 1912 and 1915.
[1533] 'Applications should be made for tickets to the Chief Clerk'. (Geographical Notes, *Proceedings of the RGS,* New Monthly Series 14 (12), (Dec., 1892), 854.
[1534] 'Christmas Lecture, Friday, January 4, 1907. "Japan and the Japanese as I saw them." By Miss A. L. Murcutt. ; Christmas Lecture, Monday, January 7, 1907.-"A Lady's Journey from the Cape to Cairo." By Miss Mary Hall.' Meetings of the Royal Geographical Society, Session 1906-1907, *The GJ* 29 (2), (Feb., 1907), 235. (The latter was delivered January 7, 1907).

Figure 38. RGS Young Person's Christmas lecture tickets, including a proof ticket for Julia Henshaw's 1924 lecture (bottom left), 'Camping in Kootenay' (RGS-IBG) Used with permission of the publisher.

Before 1929, when the RGS was able to make use of its own lecture theatre, the Christmas lectures took place in diverse London locations including scientific institutions, entertainment venues and municipal buildings. Amongst these were the Royal Medical Society's rooms in Hanover Square, Burlington Gardens theatre, the RPI, the Queen's Hall, the Aeolian Hall and the South Kensington Town Hall. The nomadic nature of these lectures is significant in demonstrating that the geographical projections space was one defined by the socio-techno assemblage of speaker, lantern, audiences and the intentions of the former, rather than by a particular physical location or vessel of an architectural space. In transcending place and space the geographical projections space became

a socio-techno 'travelling landscape-object'.[1535] This is testament to the Society being a Fellowship, a social collective formed primarily of individuals. The trust staked by audiences in the authority of the RGS is also apparent here. By staging Christmas lectures in diverse locations the Society effectively advertised itself and geography to wider audiences. Most likely the choice of venue depended partly on seating volume, the lantern technology and available gas and electricity supply. A further consideration was anticipation of demand for tickets. Yet the use of specific venues for these lectures remained dependent upon the existing identities, general type of entertainment hosted and audience demographics of the lecture venues. The broad shift from the use of the private, commercial Aeolian Hall in London's Mayfair district to the municipal site of Kensington Town Hall before the RGS constructed its hall in 1929-30 is more than just a consequence of the Society's move to South Kensington. It crystallizes the movement of the discipline from that of an outlier position to one that was ubiquitous in the British national education curriculum and science.

The demographics of these lecturers and lantern-slide producers between 1893 and 1960 reflect the pattern of lantern-slide use, deposit and withdrawal. There is a conspicuous absence of lantern-slides associated with Christmas lectures from the period 1893 – 1914. This is possibly because many of these lectures were delivered by commercial lecturers who required their lantern-slides, thus continuing the tradition of itinerant lanternists, who made a trade out of telling tales of their own experiences as 'travelling landscape-objects'.[1536] By this time, and in the broader

[1535] della Dora, Inverting perspective, 335.
[1536] della Dora, Inverting perspective, 335; Rossell, Demolition d'un mur, 327.

geographical lantern-slide landscape, the GA catered for the interests and needs of a widening demographic of geography teachers.

The terminology used to describe the Young Person's lectures is distinct form that of other lectures discussed in the chapters above. Between the 1892-93 and the 1913-14 session the lectures were referred to as 'Christmas lectures' or 'Christmas lectures to Young People'. From 1913-14 the term 'Lectures to Young People' was employed.[1537] Adults attended and appreciated the lectures, and by 1910 audience sizes had reached eight-hundred to nine-hundred.[1538] However, once the Kensington Town Hall became a regular venue from the 1914-1915 session onwards, audience sizes reached five-hundred to six-hundred.[1539] Keltie pointed out that 'half the audience is composed of grown-up people'.[1540] Later in 1914 Keltie referred to audiences 'of children of all ages up to 70'.[1541] Adults, unaccompanied by children, were also amongst the audiences. They were, however, advised to sit at the back of the hall so that the children would be able to see.[1542] Lecture venues and audience sizes were dependent upon the type of entertainment offered and the visual media that illustrated the talk. The technical requirements necessary for the showing of moving film such as a brighter light source, and the greater safety regulations introduced throughout the period of this study, particularly affected audience

[1537] Meetings of the Royal Geographical Society (Feb., 1914) Session 1913-1914 *The GJ* 43 (2), 212.
[1538] 'Lectures to Young People […] attended by large audiences both of young and old, the former, of course, predominating.' The Monthly Record, *The GJ* 1 (2), (Feb., 1893), 157; The Monthly Record, *The GJ* 9 (2), (Feb., 1897), 219 and RGS CB8/ Christmas lectures. Letter dated June 24th, 1910 from J.S. Keltie to Mrs Vassall, 1
[1539] RGS CB8/ Christmas lectures Letter from Hinks to Rev. T. T. Weston, dated 3rd November, 1916, 1.
[1540] RGS CB8/ Christmas lectures. Letter dated 14th October, 1914, from J.S. Keltie to Charles B. Gutteridge, page 1.
[1541] RGS CB8/ Christmas lectures Letter dated 24th September 1914 from J.S. Keltie to Norgate, page 1.
[1542] RGS/ CB8 Christmas lectures (G – R), [undated] typed insert: 1. A micro-geography of the RGS different lectures and audience seating arrangements in lecture venues could be undertaken.

sizes.[1543] This was especially the case throughout the 1920s before the construction of the RGS hall. At that time the Society rented different venues where there were local authority regulations to respect, amongst them licenses for showing films, and fire-proofing the projection room and gallery if the film was of a flammable type.[1544] Whilst lantern-slides were projected in this type of lecture until 1951, film was introduced circa 1934.[1545] The increasing importance of these lectures is inferred from the heightened investment in them from 1892 onwards. The number of lectures per year peaked in the first decade of the twentieth century; by 1907 they frequently included three speakers. The choice of speakers changed markedly after Markham's retirement in 1905. This is discussed further below.

RGS staff Christmas lectures 1893 – 1905

Active across the geographical projections spaces, and in the case of the Young Person's Christmas lectures, constructed around lantern-slide projections, the RGS staff performed the roles of 'practitioners of science,' 'would-be professionalizers of science' and 'popularizers of science' synchronously.[1546] In the early phase the staff lectured and conceived, if not created, the lantern-slides displayed in them from 1892 to 1905.

[1543] 'The only trouble is about the Kinematograph, because the absurd fuss the County Council and Fire Brigade make will probably involve closing the Balcony and that loses us forty or sixty seats, which are particularly valuable for children.' RGS CB9 1921-30, Christmas Lectures/ Letter dated November 22nd 1923 From Hinks to Longstaff, page 1.
[1544] CB8 Christmas lectures (G – R), letter from Hinks to Mansfield, dated September 29th, 1925, page 1.
[1545] 'Films of Northern Abyssinia' were shown, and lectured on, by Major R.E. Cheesman Lieut-Col. J.H. Williams gave the lantern-slide lecture 'Jumbos and Jungles' December 28th, 1951 (Royal Geographical Society: Notices, *The GJ* 84 (6), (Dec., 1934), iii; Following, for example, the Cinematograph Act of 1909 regarding public safety and provision for fire hazards A. Burton, *The British Consumer Co-operative Movement and film, 1890s-1960*, Manchester University Press, 2005, 98.
[1546] Lightman, *Victorian Popularizers of Science*, 9-13.

The overall tone of lectures in this first phase may have been intentionally didactic and the lectures conceived with educational purposes and audiences of both children and teachers in mind. Lantern-slides were a feature of these lectures from the outset. In the first session, 1892-93, the RGS Map Curator, John Coles lectured twice. The lectures were to be 'amply illustrated by means of the lantern'.[1547] Coles's 'own experiences and observations in various parts of the world, from Mauritius to Iceland' formed the subject of the lectures in which entertainment was as much the aim as instruction.[1548] Simpson operated the lantern and produced one hundred and one slides of Mauritius, Central and West Africa and North America were produced.[1549] This number of slides was exceptionally high compared to other meetings, as seen in Chapter 4. The tone sought for the lectures was, unsurprisingly, more in line with popular and commercial entertainments where the projections might be emphasized over the spoken word. [1550] The lantern-slides shown were considered to be 'full of geographical information' and were 'supplemented with facts and anecdotes of personal adventure in such a way as to maintain the interest of the audience throughout.'[1551] Writing in 1930, Mill and Freshfield recalled how Coles relayed 'scenes of danger and adventure on many seas and in many lands' drawing on his days serving in the Royal Navy off the coast of West Africa, and later for a private cable-laying firm in the Indian Ocean and in British Columbia at the time of the gold rush.[1552] Coles's lack of formal

[1547] *Proceedings of the RGS,* New Monthly Series 14 (12), (Dec., 1892), 854.
[1548] *Proceedings of the RGS,* New Monthly Series 14 (12), (Dec., 1892), 854.
[1549] RGS Accessions to Map Room ledger 13 Jan 1891 - June 18th 1900: 114. Simpson was paid £14.18.9 to make the slides and Coles £20 to deliver the lectures (RGS Committee Minute Books January 1891- June 1897, February 3rd 1893, Finance Committee, 85). None of Coles's original slides have survived.
[1550] See Brooker, *The Temple of Minerva,* 190.
[1551] The Monthly Record, *The GJ* 1 (2), (Feb., 1893), 157.
[1552] Mill, *The Record*, 104- 5.

academic training in geography or accreditation in education was no hindrance. His official title, since 1881, had been 'Instructor in Practical Astronomy and Surveying to the R.G.S.' [1553] He had therefore had considerable teaching experience. The lectures, with the vast numbers of images and the account of adventures on the high seas and pioneering life, attracted even greater attendance at the second lecture. The Society deemed the experiment a success and continued the initiative.[1554]

The *Record* stated that 'Christmas lectures for young people were introduced in 1893 when Mr. Freshfield spoke on Mountains'.[1555] Why Mill and Freshfield failed to recollect or discover Coles's first lectures of 1892-93 is unclear. At that time of the early 1890s Mill was not employed by the RGS. Freshfield's memory may have been declining by 1929-30 when he and Mill collaborated on the *Record*. Equally, an elderly man's vanity may also have impelled him to state that his own lectures came first. In any case, Freshfield, one of the galvanizing forces behind the RGS's reinvigorated educational activities throughout the 1880s, delivered three Christmas lectures in the 1893-4 session. It is not known how contemporary audiences received them, but a discussion of the lectures is nonetheless pertinent to a wider understanding of the series. Freshfield spoke on the topic of mountains, extending thereby the territory of 'mountains and memory'.[1556] In comparison to Coles's first lecture, Freshfield offered the young audience a lecture that was more cerebral in content and methodically structured. The opportunity to make, and to publish in the *GJ*, a point about the national methods of geography teaching and the

[1553] Jones, Measuring the world, 320.
[1554] The Monthly Record, *The GJ* 1 (2), (Feb., 1893), 157.
[1555] Mill, *The Record,* 149.
[1556] della Dora, Mountains and Memory, 217-232.

perception of the subject's utility and the doubts around its cognitive merits, was not lost. Exceptionally, the *GJ* carried a summary of the papers and the images that illustrated them. The *Journal* never had, and never would again, feature such a detailed synopsis of Young Person's lectures. Freshfield's lectures were illustrated by lantern-slides made from photographs taken, or lent, by several leading mountain photographers of the day, including Mr. W.F. Donkin, Mr. Holmes, Mr. H. G. Willink, Signor Vittorio Sella, M. de Dechy and other members of the Alpine Club.[1557] These photographic lantern-slides were integral to the comparative method of exposition he used. Freshfield first outlined the physical characteristics behind the creation of the Alps and then the more recent human occupation and activities that had taken place within them. From Alpine geography he branched out to a comparison with the Caucasus, using photographic and cartographic evidence. [1558] The first lecture discussed the physical geography, structure and features of mountains with a focus on snow-mountains; the second assessed the discovery of the High Alps and their textual and visual representations through the ages, and the third told of the exploration of the Caucasus, with special reference to the three expeditions conducted by Freshfield in the region.[1559] Each lecture was held at the Hall at 20 Hanover Square in London, thereby further demonstrating how the RGS was active beyond its 1 Savile Row House.[1560] Simpson produced the lantern-slides and operated the lantern.[1561]

[1557] D. W. Freshfield, Mountains, *The GJ* 3 (3), (Mar., 1894), 230- 232.
[1558] Freshfield, Mountains, 230-232.
[1559] Freshfield, Mountains, 228.
[1560] Freshfield, Mountains, 228.
[1561] 'H. W. Simpson (lantern and Slides for Mr. Freshfield's lectures) £2.17.-' RGS Committee Minute Book Jan 1891 - June 1897 Finance Committee meeting minutes, February 5th 1894, page159.

Freshfield adopted a didactic tone. This was in a vein markedly different from the apparent tone of adventure in Coles's earlier lectures. The RGS, he explained, existed not only to discover unknown lands and promote scientific research, but also to fulfill the duty it owed to the country 'to see that all useful geographical knowledge is disseminated as widely as possible, and that geography as a science holds its proper place in national education'.[1562] His aim was to show that geography could teach 'a man' to think instead of consist solely of learning strings of names of capes, islands, and provinces by rote, as Freshfield himself had experienced in his schooldays.[1563]

The didactic note continued throughout H. R. Mill's lectures. Replacing Keltie, as librarian, Mill joined the RGS in 1893. From 1894 he delivered most of the Young Person's lectures. His own unconventional educational background, and, by then, ample lecturing experience, including to audiences at the London Institution from autumn 1893, qualified him.[1564] From 1891 lantern-slides were, by Mill's own admission, incorporated into his teaching.[1565] Thus by this time he may already have been proficient in lecturing with two lanterns, a technique recommended to him by Patrick Geddes, and which facilitated the comparative methods so typical of this time.[1566] Mill recalled that he 'took to the use of two lantern-screens side by side, with two separate lanterns for more important lectures, when a highly competent lanternist were available. […] The two screens admit a map being

[1562] Freshfield, Mountains, 229.
[1563] Freshfield, Mountains, 229.
[1564] Keltie, Thirty years work, 357.
[1565] Mill, *An Autobiography,* 64. 'He was in the habit of illustrating his lectures with large diagrams on stout paper which took a long time to prepare and were very cumbrous to carry; and in 1891 he abandoned them in favour of lantern-slides. The maps were reproductions in colour of the maps in the Realm of Nature, and most of the slides were examples of scenery which displayed typical geographical forms.' (Mill, *An Autobiography*, 86).
[1566] Mill, *An Autobiography*, 65; Clark and Doel, Engineering space and time, 41-44.

shown on one, while a succession of scenes passes over the other, or a series of diagrams being compared. A high degree of concentration, however is required when using this method.'[1567] Pratt's overdeterministic model of hegemonic eye of the lantern is undermined here; Mill, in employing double projections, that saw the comparison of maps and images, promoted a form of parallax amongst his young audiences, that enforced the chiastic duality of the human and physical aspects of geography.[1568]

As well as fine collodion photographic views of types of geographical configuration and geological structure, Mill developed innovative methods of making diagrams. These included scratching in white lines on to the glass plates, and wax colouring, since a clear bold outline could be far more effective than a photographic copy of a drawing.[1569] Taking inspiration, perhaps, from popular and entertainment techniques of lantern-slide use, he produced mechanical slides with revolving hands that showed the movements of 'the North Atlantic currents, of the change of the monsoons, and of Darwin's theory of the formation of the coral islands by the subsidence of the sea-bed', effectively creating moving images at the very time that cinema was in the course of being invented.[1570] Such performances with two lanterns and mechanical slides suggests that what Clark and Doel called 'animated photography' may well have featured at the RGS well before the first instance of moving film by Vaughan Cornish in November 1901.[1571] The potential of mechanical kinetics of lantern-slides may account for the intertwined relationship of physical scientists and the

[1567] Mill, *An Autobiography*, 66.
[1568] Pratt, *Imperial eyes,* 7.
[1569] Mill, *An Autobiography*, 65.
[1570] Mill, *An Autobiography*, 65.
[1571] Clark and Doel, Engineering space and time, 51; V. Cornish, Cinematographing the Severn Bore, *The GJ* 19 (1), (Jan., 1902), 52-54 .

lantern.[1572] The aesthetic appeal of Mill's lectures was heightened by the mastering by Mill's wife, Frances (née MacDonald), of the art of painting lantern-slides in transparent oil-colours that led to Mill's slide collection growing 'in beauty as well as in numbers'.[1573] Thus Frances' skill as well as her understanding of, and ability to represent processes of geographical phenomena and interactions, was integral to her husband's lecture performance. Indeed, at the International Geography Conference of 1896, hosted by the RGS, the couple demonstrated the simultaneous use of two lanterns together. [1574] [1575] This example therefore answers Rose's questioning of whether or not the single projector reiterates Pratt's vision of the 'seeing-man'.[1576] The image of the 'mercantile, bourgeois, masculine "distanced gaze" that surveys and possesses the landscape is also made redundant.[1577] Revisiting Crary's take on parallax as 'binocular disparity … bound up in the physiological question of human vision, and a monocular device precludes having to theoretically reconcile these dissonant, and thus provisional, images presented to each eye.', we see that the visions of at least two individuals, albeit intimately connected ones, were filtered through

[1572] Rossell, Demolition d'un mur, 319.
[1573] Mill, *An Autobiography*, 65.
[1574] Mill and his wife displayed ninety-six lantern-slides produced by different methods. Report of the Sixth International Geographical Congress Held in London 1895. With Maps and Illustrations, Edited by the Secretaries. 1896. London" John Murray, Albermarle Street. Berlin: Dietrich Reimer (Hoeffer & Vhsen) Hachette Et CIE. / Catalogue of the Exhibition, London 1865, Revised As Appendix B To The Report Of The Sixth International Geographical Congress, 16.
[1575] The absence of many of Mill's slides, a collection that once numbered over two thousand in the RGS collections, may be due to the fact that Mill bequeathed them to Alan Ogilvie, then Professor of Geography at the University of Edinburgh. (Mill, *An Autobiography*, 65.) The University of Edinburgh's Geography department has not yet ascertained whether or not Mill's lantern-slides have survived.
[1576] Pratt, *Imperial eyes,* 7 in Rose, On the need to ask how, exactly, is geography 'visual'?, 216.
[1577] della Dora refers the reader to D. Cosgrove, *Social Formation and Symbolic Landscape,* Totowa, NJ: Barnes and Noble, 1984; D. Cosgrove, Prospect, Perspective and the Evolution of the Landscape Idea, *Transactions of the Institute of British Geographers,* New Series 10, 1985, 45-62; G. Rose, *Feminism and Geography: The limits of Geographical Knowledge*, Cambridge University Press, 1993 in della Dora, Inverting perspective, 239.

the lantern thereby questioning the epithet of 'monocular' employed by Crary.[1578] More apposite in the case of the Mills' team-work is the concept of parallax, reinterpreted by Thomas and Losch as 'double vision'.[1579]

Mill's first Young Person's lectures at the end of December 1894 and early January 1895 in the Savile Row Map Room demonstrated the use of two lanterns. The four lectures, illustrated by 'lime light views', conceived as a series, were on 'Holiday Geography'.[1580] The aim was 'to bring the brighter and more attractive aspects of geography into prominence, and to show how much a little knowledge of geographical principles and methods could add to the enjoyment of a holiday in the country or in a foreign land'.[1581] Maps 'as holiday companions' were the subject of the first lecture, which exposed 'the importance of learning to read and interpret maps in order to get the full benefit of their companionship on a solitary walk or bicycle ride.'[1582] Mill focused on the nature and uses of geographical pictures, with special reference to Amateur Photography, in the second lecture. A definition of 'geographical picture' as one 'both characteristic and representative of a special region, taking account either of the land-forms, the vegetation, commercial products, dwellings, means of transport, or the people of the country' was given to the audience.[1583] The objective of this teaching was to demonstrate that 'Such pictures combined with maps would

[1578] Crary, *Techniques Of The Observer,* 48-49
[1579] Thomas and Losche (Eds), *Double Vision,* 1999.
[1580] The Monthly Record, *The GJ* 5 (2), (Feb., 1895), 166. The lectures included: '1. Maps as Holiday Companions. 2. Geographical Pictures, with special reference to Amateur Photography. 3. A Neglected Corner – the English Lakes. 4. A Geographical Holiday on the Edge of the Alps. All the lectures will be illustrated with limelight views – pictures, diagrams, and maps.' The Monthly Record, *The GJ* 4 (6), (Dec., 1894), 562.
[1581] 'The Christmas Lectures' by Dr. H. R Mill in The Monthly Record, *The GJ* 5 (2), (Feb., 1895), 166.
[1582] 'The Christmas Lectures' by Dr. H. R Mill in The Monthly Record, *The GJ* 5 (2), (Feb., 1895), 166.
[1583] 'The Christmas Lectures' by Dr. H. R Mill in The Monthly Record, *The GJ* 5 (2), (Feb., 1895), 166.

enable a stranger to form a true and vivid impression of a country he had never seen, and the selection of proper subjects and view-points lend a new charm to amateur photography.'[1584]

Mill, by 1895, produced his own photographs and was able 'to get slides made of many interesting scenes of geographical significance which no professional photographer would ever think of taking.'[1585] Having spent part of the last year 1893-4 conducting the fieldwork for the survey of the English lakes, discussed in Chapter 7, Mill projected lantern-slides made from recently taken photographs.[1586] Over three hundred slides of maps and pictures 'specially prepared, many of them from photographs taken for this course of lectures' projected simultaneously by two lanterns on to two adjacent screens allowed a comparison of the geography of the English Lake District and the Tyrolian Alpine Valleys. The daughter of a lady Fellow won a prize for an exercise given by Mill in the first lecture for 'the best map drawn in contour-lines on a sheet, simply bearing figures of height and depth'.[1587] If women were neither fully admitted to the RGS, nor their achievements in producing geographical knowledge fully acknowledged by the Society, then those of girls were in the case of this lecture.

In January 1897, Mill gave a Christmas lecture at the Alpine Club titled 'In Search of an Eclipse-the Coast of Norway.'[1588] This was an account of his own August 1896 trip to Varangar fjord. Two lanterns figured alongside his rhetorical performance; one screen showing Mill's progress along the route; the other typical scenery that might be encountered. The photographic lantern-slides projected were again intentionally stereotyping

[1584] 'The Christmas Lectures' by Dr. H. R Mill, 166.
[1585] Mill, *An Autobiography*, 65.
[1586] Mill, *An Autobiography*, 51.
[1587] The Monthly Record, *The GJ* 5 (2), (Feb.,1895), 166.
[1588] The Monthly Record, *The GJ* 9 (2), (Feb., 1897), 219.

since their object was to show 'the most characteristic features of the scenery and people'.[1589] Mill explained the production of the local climate through the interaction of the local topography and Gulf Stream and how, consequently, the natural vegetation and the human agricultural practices was affected by this. Patterns of ethnic distribution were examined. The distribution of technologies such as electricity was assessed as a cultural adaptation to the local conditions of winter darkness. Images of characteristic local material culture were 'shown and explained' such as buildings, carriages, ships, as were local commercial industries of fishing-operations and whale-boiling.[1590]

Although he left the RGS in 1899, Mill returned to deliver further Young Persons' lectures. Aged sixty-four he spoke on 'Some Explorers I knew' (1925) and 'Captain Cook's Quest of the Southern Continent' (1929), at the Aeolian Hall.[1591] Since he was, by then, near-blind, Mill was unable to read notes and could only deal with subjects with which he was familiar. He remained skilled at narrative making via the weaving of words and pictures, and endowed as he was with those special powers of visualization and imagination with which the geography teaching of this era was affiliated. Throughout the course of his life he had reflected not only upon his own changing abilities and technological developments in knowledge presenting. As he stated in 1951 'once the plan was arranged in the proper sequence, one theme instantly suggesting the next, the descriptive words came for themselves, for words and I have always been the closest of allies.'[1592] He set himself 'to suggest visual images by throwing into relief the salient

[1589] The Monthly Record, *The GJ* 9 (2), (Feb., 1897), 219.
[1590] The Monthly Record, *The GJ*, 9 (2), (Feb., 1897), 219.
[1591] Mill, *An Autobiography*, 67.
[1592] Mill, *An Autobiography*, 67.

features of my subject and reducing the inessential background so as not to distract attention.'[1593] He was particularly pleased with the Captain Cook lecture in which he retained in his mind 'only the barest of framework of linked pictures, the language coming at the moment of varying with the response of the audience.'[1594] Here, as with the adoption of the lantern discussed in Chapters 5, 6 and 7 the RGS audiences actively shaped knowledge as it was produced in the geographical projections space. The experiment of knowledge making therefore continued at this time and even after the uptake of the lantern.

Above I have assessed how the RGS cultivated and attracted younger audiences. The adoption of the lantern did not in itself represent an inherently popularizing strategy since the technology was, by then and as seen previously, used for scientific as much as entertainment purposes. Whilst the chapter has thus far shown a widening of audiences authorized to participate in geographical knowledge, the demographic of the producers of that knowledge remained restricted to RGS staff and councilors. The second phase of this lecture series, investigated below, saw the admission and display of geographical knowledge by producers deemed to be commercial, and certainly more socially diverse.

Expanding the spectrum of geography: **the traveller and commercial lecturer Julia Henshaw**

Rose noted that when geographers and images interact 'effects follow'.[1595] Ryan pointed to the importance of 'different registers of visual authority

[1593] Mill, *An Autobiography*, 67.
[1594] Mill, *An Autobiography*, 67.
[1595] Rose, On the Need to Ask How, Exactly, Is Geography 'Visual'?, 218.

associated with diverse geographies of display'.[1596] As Chapter 7 evidenced from as early as 1888 the RGS Evening Meeting audiences had been exposed to photographic lantern-slides with additional elements of colour.[1597] Yet in what follows I show how an extensive and contingent spectrum of registers of visual authority constellated around the RGS Young Person's lantern-slide lectures. Visual effects such as colour at times undermined or enhanced visual authority depending on the viewer's perception.

Chapters 2 and 6 drew attention to historical geographers' interest in landscapes of visual authority, amongst which the concern with geographies of colour featured prominently, in the epistemology of geography's lantern-slide practices.[1598] Throughout the Young Person's lectures one of the recurring forms of visual authority was the display of coloured lantern-slides. Existing scholarship on geographical visual practices, such as Ryan's, identified the changing authority of specific forms of coloured images in particular contexts, as well as some specific geographies of production and consumption of coloured visual media.[1599] Chapter 7 discussed the first hand-coloured lantern-slides shown in RGS meetings such as those drawn from Dunmore's watercolours, and contrasted the recorded emotional responses to the aesthetics of those slides. The display of 'naturally' or directly coloured photographs and lantern-slides, using the Ives process, in the RGS meetings in Mackinder's 1901 lecture on the expedition to the summit of Mount Kenya has received

[1596] Ryan, *Picturing Empire: photography and the visualization of the British Empire,* 222.
[1597] D. Freshfield,'Suanetia' [lecture read at the Evening Meeting, March 12th, 1888]. RGS-IBG slide set 101.
[1598] Ryan, Who's afraid of visual culture?; Driver, On geography as a visual discipline; Rose, On the need to ask how, exactly, is geography 'visual'?
[1599] Ryan, *Picturing Empire.*

some scholarly attention.[1600] At a time of rapid development in processes of colourization at the turn of the nineteenth and twentieth centuries, colour photography in shades approximate to those perceived by the human eye, and thus deemed 'natural', remained expensive and slow. Consequently, well into the mid-1930s when Kodachrome film became widely available in the UK it was rarely practiced.[1601] However, photography comprised many limitations in its inability to convey perceived aspects of the drama, scale or colour of geographical features. Within the context of comparative, and visual, scientific and educational methods its limits were apparent. Ryan highlighted the importance of this in a study of the mixed processes of visual recording analyzed in relation to the expeditionary photographs by Chapman of the Victoria Falls.[1602] Despite this, I show here that across the period of 1893 to 1960 attention was frequently drawn to the projection of coloured lantern-slides in Christmas lectures. For example, the Society highlighted lectures that included photographs and the slides reproduced from them via the autochrome technique developed by the Lumière brothers,[1603] by the Albert Kahn scholarship recipient,[1604] Mr P.M. Roxby, in his 1916 lecture 'Pictures of China and Korea'.[1605]

By investigating some of the ways in which hand-coloured lantern-slides shaped perceptions of both the presence and the lack of authority of

[1600] Ryan, *Picturing Empire,* 121–127.
[1601] B. Lavédrine and J-P. Gandolfo, *L'Autochrome Lumière Secrets d'Atelier et Défis Industriels,* CTHS, 2009, 40-43.
[1602] Ryan, *Picturing Empire,* 217-18.
[1603] Lavédrine and Gandolfo, *L'Autochrome Lumière Secrets d'Atelier et Défis Industriels,* 82-88.
[1604] 'At the outset of his lecture on China, Mr. Roxby explained that his visit to that country formed part of a journey round the World, which had been undertaken under the Albert Kahn Foundation.' P.M Roxby, Some Aspects of The Geography of China, *The Geographical Teacher* 8 (1), (Spring, 1915), 1.
[1605] Roxby's lantern-slides were not accessioned into the RGS collections. Examples of them remain in the collections of the Albert Kahn Foundation in Paris: http://albert-kahn.hauts-de-seine.fr/musee/decouvrir-le-musee/exposition-permanente/

a speaker and their aptitude to deliver Young Person's lectures, I present an example of the RGS staff's own undertaking of a historical geography. I draw on sources concerning two lectures by a traveller and commercial lecturer Julia Henshaw in 1914 and 1924, respectively.

The audience responses considered here are those of former RGS Councilors who had witnessed Henshaw's 1914 lecture. Having spoken already to a Young Person's audience in January 1914 about 'A New Playground in Vancouver Island', Henshaw, author of *Mount Wild Flowers of America* (1906), approached the Society again in July, 1923.[1606] A large close up image, taken from a lantern-slide, of a western colombine flower, hand-coloured, and printed, in green, red and yellow, dominates her publicity brochure and advertised her skills (Figures 39 & 40).[1607]

[1606] Julia W. Henshaw, *Mountain Wild Flowers of America: A simple and popular guide to the names and descriptions of the flowers that bloom above the clouds*, Ginn & Company, Boston, 1906; The *GJ* Notices announced the lecture: 'Lectures to Young People in the Theatre, Burlington Gardens, at 3.30 p.m. Friday, January 2, 1914. – A New Playground in Vancouver Island. By Mrs. Henshaw.' Notices, *Geographical Journal* 42 (6), (Dec., 1913), iv.

[1607] Henshaw, *Mountain Wild Flowers of America,* 137 [Plate XLII, Western columbine (Aquilegia formosa)].

ILLUSTRATED LECTURES

On Mountains, Alpine Wildflowers, Big Game and Adventure in Canada

BY JULIA W. HENSHAW

Fellow of The Royal Geographical Society, London, England. Honorary Secretary of The Alpine Club of Can. a.

Post Box 344, Vancouver, B. C., Canada

Officer of the Order of Saint Charles. Croix de Guerre with Gold Star.

British War Medal

Allied War Medal

Ruban des Croix de Guerre with Red Star.

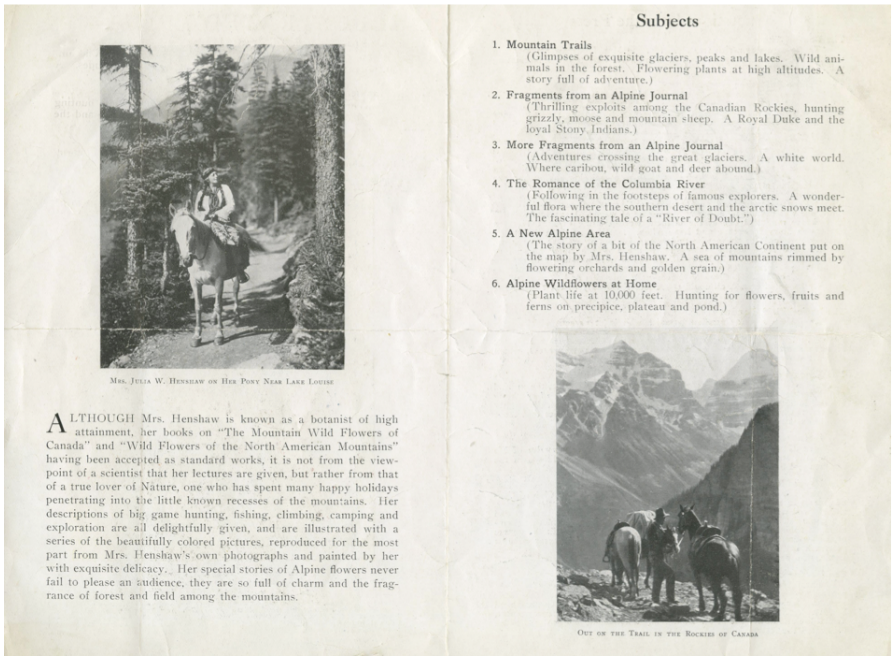
Mentioned in Despatches four times.

Photo by Mrs. Henshaw

Western Columbine (Aquilegia formosa)

Mrs. Henshaw is the most celebrated flower photographer in Canada. Her pictures of plants taken among the mountains at altitudes varying from 1,000 to 10,000 feet, are world-famous, and have attracted immense audiences all over the United States, England, Scotland, Ireland and Canada, where she has lectured before such distinguished Societies as the Royal Geographical Society, London; the American Alpine Club, New York; the Appalachian Club, Boston; at the Universities of Oxford, Cambridge, Lafayette and Stanford; the Royal Colonial Institute, London; the Camera Clubs of London and San Francisco; the Linnean Society, London; the Royal Horticultural Society, London; the Sierra Club, California, etc., etc.

Figure 40. Cover of Julia Henshaw's *Illustrated Lectures* pamphlet, c.1923. (RGS-IBG) Used with permission of the publisher.



Mrs. Julia W. Henshaw on Her Pony Near Lake Louise

ALTHOUGH Mrs. Henshaw is known as a botanist of high attainment, her books on "The Mountain Wild Flowers of Canada" and "Wild Flowers of the North American Mountains" having been accepted as standard works, it is not from the viewpoint of a scientist that her lectures are given, but rather from that of a true lover of Nature, one who has spent many happy holidays penetrating into the little known recesses of the mountains. Her descriptions of big game hunting, fishing, climbing, camping and exploration are all delightfully given, and are illustrated with a series of the beautifully colored pictures, reproduced for the most part from Mrs. Henshaw's own photographs and painted by her with exquisite delicacy. Her special stories of Alpine flowers never fail to please an audience, they are so full of charm and the fragrance of forest and field among the mountains.

Subjects

1. **Mountain Trails**
   (Glimpses of exquisite glaciers, peaks and lakes. Wild animals in the forest. Flowering plants at high altitudes. A story full of adventure.)
2. **Fragments from an Alpine Journal**
   (Thrilling exploits among the Canadian Rockies, hunting grizzly, moose and mountain sheep. A Royal Duke and the loyal Stony Indians.)
3. **More Fragments from an Alpine Journal**
   (Adventures crossing the great glaciers. A white world. Where caribou, wild goat and deer abound.)
4. **The Romance of the Columbia River**
   (Following in the footsteps of famous explorers. A wonderful flora where the southern desert and the arctic snows meet. The fascinating tale of a "River of Doubt.")
5. **A New Alpine Area**
   (The story of a bit of the North American Continent put on the map by Mrs. Henshaw. A sea of mountains rimmed by flowering orchards and golden grain.)
6. **Alpine Wildflowers at Home**
   (Plant life at 10,000 feet. Hunting for flowers, fruits and ferns on precipice, plateau and pond.)

Out on the Trail in the Rockies of Canada

Figure 41. Inside of Julia Henshaw's *Illustrated Lectures* pamphlet, c.1923. (RGS-IBG) Used with permission of the publisher.

The brochure declared that her lectures included 'beautifully colored pictures, reproduced for the most part from Mrs. Henshaw's own photographs and painted by her with exquisite delicacy'.[1608] It announced her societal affiliations as 'Fellow of The Royal Geographical Society […] Honorary Secretary of the Alpine Club, Canada'.[1609] She was described as 'the most celebrated flower photographer in Canada'.[1610] The text specified the altitudes to which she had ventured in order to produce the images. On the cover were also listed the locations to which her lectures and lantern-slides had attracted 'immense audiences' including scientific societies, camera clubs and universities in the U.K., Ireland, the USA and Canada.[1611] This evidences the existence of specific sites of authority, whose value were recognized across imperial and trans-Atlantic Anglophone networks of knowledge production. Within these sites lantern-slides were an authorized medium and Henshaw's ability to communicate 'not from the stand point of a scientist […], but rather as a true lover of Nature, one who has spent many happy holidays penetrating into the little known recesses of mountains' was promoted by Henshaw's self-definition as a performer.[1612] The inclusion of press quotations (all in English), including *The London Times* to the *Dundee Advertiser* and *The Vancouver Sun* celebrated both her lecturing skills and images (Figure 34).[1613] Through the co-performance of images and words, Henshaw was said to take the audience 'with her on the wings of fancy to a land of snow-capped mountains, fragrant with the scent of fir and pine […] she had brought back the spirit of the

[1608] RGS/ CB8 Christmas lectures (G – R), 'Illustrated Lectures […] By Julia Henshaw' publicity brochure, 2.
[1609] RGS/ CB8 Christmas lectures (G – R), 'Illustrated Lectures […] By Julia Henshaw', 1.
[1610] RGS/ CB8 Christmas lectures (G – R), 'Illustrated Lectures […] By Julia Henshaw', 1.
[1611] RGS/ CB8 Christmas lectures (G – R), 'Illustrated Lectures […] By Julia Henshaw' 1.
[1612] RGS/ CB8 Christmas lectures (G – R), 'Illustrated Lectures […] By Julia Henshaw', 2.
[1613] RGS/ CB8 Christmas lectures (G – R), 'Illustrated Lectures […] By Julia Henshaw' *The London Times* quote page 4.

mountains'.[1614] Such transcendental effects were the result of the nexus of personality, words, images and, of course, audience expectations in the manner of the faith attributed to icons in della Dora's 'numinous materialities'.[1615] In addition to the lantern-slides exhibited, Henshaw was said to create 'prose-poems' and verbal imagery through her 'beautiful word-painting' at a time when 'hasty staccato prose' was common.[1616] Even audience members who were 'unscientific and untravelled' could appreciate her beautiful slides that were quite different from anything hitherto shown in England, being hand-tinted by a new process, which makes them resemble fine soft water-color sketches' (sic).[1617] Her authority and ability to sustain a commercial career from lantern lectures came from the mutually enhancing lantern-slide images and rhetorical skills, and not only from her skills as a photographer, but her ability to enhance their aesthetic appeal and heighten the pathetic responses of audiences to them, with the addition of delicately render hand-colour.

Despite her apparent empire- and ocean-spanning reputation and experience, Hinks was unconvinced by Henshaw's illustrated brochure, experience and favourable press reviews. Instead he sought advice from Freshfield and Thomas Hungerford Holdich (1843-1929), a former RGS president.[1618] The correspondence between the three men reveals that the perceived value of photographs, and their symbolic objectivity did not stand alone. Instead this quality was relative to other factors, as discussed in

[1614] RGS/ CB8 Christmas lectures (G – R), 'Illustrated Lectures […] By Julia Henshaw', *The Dundee Advertiser* quote page 4.
[1615] della Dora, Inverting Perspective, 334-354.
[1616] RGS/ CB8 Christmas lectures (G – R), 'Illustrated Lectures […] By Julia Henshaw', *The Dundee Advertiser* quote page 4.
[1617] RGS/ CB8 Christmas lectures (G – R), 'Illustrated Lectures […] By Julia Henshaw', *The Ladies Field* quote, page 4.
[1618] E. Baigent, ODNB entry for Thomas Holdich: http://0-www.oxforddnb.com.lib.exeter.ac.uk/view/article/33932. (Accessed 26.02.2016).

Chapter 8. A lecturer's perceived authority and aptitude for lecturing was the product of a nexus of factors; the quality of the lantern-slides, the suitability of the subject matter for a specific audience, the speakers' lecturing ability and their character. Holdich remembered Henshaw's earlier lecture on the uplands of Vancouver very well 'on account of the illustrations which were exceptionally artistic & good'.[1619] Responding to Hinks' inquiries, Holdich wrote 'I remember being very much interested in it and admiring the coloured illustrations of alpine fauna; but I don't remember the lady herself! I have however no hesitation in recommending her as a lecturer'.[1620] Hinks meanwhile replied 'My recollections of her are that her pictures are good but her style flamboyant'.[1621] Finally, Freshfield was consulted. Writing that 'the lady is an enthusiast […] the coloured views are very good,'[1622] he advised that she 'would hardly be material for an Evening Meeting but is I fear vy very well suited for a Xmas lecture, at Xmas anything Canadian is suitable & attractive on these occasions' (sic).[1623] Eventually, and despite Hinks' reservations, Mrs Julia Henshaw was booked to deliver an illustrated lecture on 'Camping in Kootenay, British Colombia' at the Aeolian Hall on Friday January 4th, 1924 (Figure 39). The affective quality of her hand-coloured slides and the suitability of the subject matter undoubtedly informed the decision to hire her. Consequently, the authority of the visual was not immutable and it could be undermined by other factors such as the rhetoric employed and individual presentational styles. Yet Henshaw's 'beautiful

[1619] RGS/ CB8 Christmas lectures (G – R), letter dated 3rd August [1923] from Holdich to Hinks, page 1.
[1620] RGS/ CB8 Christmas lectures (G – R), Holdich to Hinks 3rd August [1923], RGS, page 2.
[1621] RGS/ CB8 Christmas lectures (G – R), letter dated 7th August 1923, from Hinks to Holdich, page 1.
[1622] RGS/ CB8 Christmas lectures (G – R), letter dated August 8th/23 letter from Freshfield to Hinks, pages 1-2.
[1623] Freshfield to Hinks August 8th/23, RGS, 2.

pictures' did not disappoint. With words that echoed the very grounds on which the lantern had first been objected to, Hinks acknowledged that Henshaw was 'singularly successful in colouring […] lantern-slides, and it was a great treat to see them'.[1624]

The demise of the itinerant lanternist trade occurred between the 1820s and 1870s according to Mannoni.[1625] Yet the case of Henshaw, Roxby and the OUE extension lecturers discussed in Chapter 6, shows that travelling storytellers persisted, only with their slides rather than their lantern on their backs, well into the late nineteenth and early-twentieth centuries. As I have shown the identity of these storytellers was somewhat blurred. Operating as much for academic ideals, as for commercial and individual as well as disciplinary gain across dispersed and multiple landscapes, these individuals are usefully envisioned as 'nothing but storytellers'.[1626] They did so via graphic and verbal imagery, and via the technology of the lantern and lantern-slides.

Questions surrounding the relationship between colour, authority, originality and veracity were not restricted to the medium of photography, but also concerned other forms of representation adopted by both men and women. Henshaw's geographical explorations and artistic endeavors represent the extension of a longer tradition of female botanical artists working in the medium of watercolour explored by Secord and Shteir in relation to eighteenth century and early to mid-nineteenth century gendered

[1624] RGS/ CB8 Christmas lectures (G – R), letter dated January 7th, 1924 From HInks to Henshaw, page 1.
[1625] Mannoni, *The Great Art of Light And Shadow,* 103.
[1626] Entrikin, *The Betweeness Of Place,* 58 in della Dora, Travelling landscape-objects, 337.

botanical knowledge.[1627] This branch of knowledge making, scholars have shown, was performed in both private and non-academic settings from the eighteenth century onwards.[1628] Henshaw's *Mountain Wild Flowers* is structured around a spectrum of colour, with four sections that slide from White to Green Flowers, Pink to Red Flowers, Blue to Purple Flowers and Yellow to Orange Flowers to a formal shift to Flowering Shrubs.[1629] Paradoxically, despite the arguable scientific veracity of Henshaw's hand-coloured lantern-slides, it was this very aesthetic element that engendered prejudice from Hinks about her suitability to deliver a Christmas lecture at the RGS. Hand-colouring, although a necessary addition for transcending the limits of the then still predominantly black and white photography, continued to resonate with what was perceived as common and sensational and thus inferior.

The definition of such works as either truthful or fictitious, and scientific or non-scientific is thus problematic and would therefore confirm the assertion discussed above that the distinction between the popular and the scientific was 'muddled'.[1630] When we view what was, presumably, Henshaw's own positioning of herself as someone who did not see from the 'standpoint' of a scientist but 'as a true lover of Nature'[1631] in conjunction with the assigning by others of such epithets as 'artistic', 'flamboyant', 'enthusiast', discussed above, we can infer that these were terms that conflicted with changing perceptions of scientific behaviour and its related

[1627] A. Secord, Science in the pub: artisan botanists in Eearly nineteenth-century Lancashire, *History of Science* 32, 1994, 269-315; Secord, Botany on a plate, 28-57; A. B., Shteir, Iconographies of Flora in A. B. Shteir and B. V. Lightman (Eds), *Figuring it Out Science, Gender and Visual Culture,* University Press of New England, 2006, 3-27.
[1628] Secord, Botany on a plate; A. Secord, Pressed into service: specimens, space, and seeing in botanical practice in Livingstone and Withers (Eds), *Geographies of Nineteenth-Century Science*, 283-310.
[1629] Henshaw, *Mountain Wild Flowers of America,* [Contents page (xiv)].
[1630] Ryan, *Picturing Empire,* 215.
[1631] RGS/ CB8 Christmas lectures (G – R), 'Illustrated Lectures […] By Julia Henshaw', 2.

qualities. Nevertheless, it is also possible to argue that Henshaw's hand-coloured images were more faithful to nature, as it could be seen generally by a human eye, than any black and white photograph, and thus that they were truer. In light of this the chapter informs the confluence of colour and gender in the construction of different registers of scientific or sensational authority, particularly in view of the changing colour photographic film processes and wider colour printing techniques. These industrial innovations inform further important debates within the RGS and geography, notably those surrounding the style of cartographic representations to be adopted in the Ordnance Survey maps. Questions about the performativity of colour in lantern-slide lectures inform similar concerns about form and function in cartographic representations. In Henshaw's case the lantern-slide images were produced by her eye and hand in their application to photographic technologies and paintbrush, both in 'the field' and elsewhere, possibly at home.

Such mistrust of images, and more specifically coloured images, produced by women, is all the more notable since Marion Newbigin, an established figure in fin-de-siècle geography circles, as Bell and Maddrell have demonstrated, had highlighted in her book *Colour in nature* (1898) the want of 'careful observation of the colours of organisms, not only because of their evolutionary significance, but also 'because of their frequently great intrinsic beauty'.[1632] Henshaw exemplifies a group of female producers of geographical knowledge, unfettered by institutional or disciplinary confines who, arguably, exemplified a wider spectrum, and yet to be mapped, of

[1632] M. Newbigin, *Colour in nature,* 1898, 1 in Bell, Reshaping boundaries: international ethics and environmental consciousness in the early twentieth century, 164; A. M. C. Maddrell Scientific discourse and the geographical work of Marion Newbigin, *Scottish Geographical Magazine* 113 (1), 1997, 35-38.

professional geographers than has previously been acknowledged. This chapter therefore offers new technological and historical geographical dimensions to existing histories of eighteenth to mid-nineteenth-century female botanical artists and popularizers of science via its discussion of hand-coloured photographic lantern-slides.[1633] In doing so it concurs with Le-may Sheffield's perspective that 'Botanical art is not strictly a mechanical activity of dexterity with no thought, knowledge or creativity needed, but can be an active and interpretive contribution to science', even when undertaken via a mechanized mode of representation such as the camera, and mechanized reproductive medium of the magic lantern.[1634]

The gendering of visualities is, as outlined above, recognized, but texture and depth can be brought to this body of work via an attentiveness to later historical geographies of colour as well as their technological remediation, such as in lantern-slide lectures, for specific audiences. By adding a new branch to this field of knowledge, and in extending the temporal range of studies of female botanical artists, the case of Julia Henshaw provides a foundation from which to extend both forwards and backwards in time, and in Britain, the empire and beyond, lantern-slide lectures of female knowledge makers and producers. Significantly, her example also pluralizes the current spectrum of professional geographers. Temporal and spatially-specific dialogics of gender, specific types of image, colour and, crucially, geography seen here demonstrate the need for case by case understandings of the RGS lantern-slide lectures.

[1633] B. T. Gates, Those who drew and those who wrote: Women and Victorian Popular Science Illustration, in A. B. Shteir and B. V. Lightman (Eds) *Figuring it Out Science, Gender and Visual Culture,* University Press of New England, 2006, 192-239.

[1634] S. Le-May Shefiiled, Gendered Collaborations Marrying Art and Science in A. B. Shteir and B. V. Lightman (Eds), *Figuring it Out Science, Gender and Visual Culture,* University Press of New England, 2006, 240- 264.

Conclusion

This chapter argued that the RGS educational activities constituted a geographical projections space where visual and verbal performances inducted audiences into geographical ways of knowing. Audiences participated in the creation of this space by projecting interpretations and by responding to the displayed lantern-slide images. I have situated the RGS educational initiative in relation to those of other learned societies around London and the U.K. Additionally, I have shown how figures such as Freshfield and Mill were active in geographical projections spaces beyond the physical architectural space of the RGS at 1 Savile Row. Lantern-slides were thus significant in the expansion of the geographies, physical and human, of geography in the 1890s when the discipline was *professionalizing*, rather than professionalized. This remained the case after 1887 and the establishment of the Readership in geography at the University of Oxford. Geography's process of professionalization thus concerned not just universities or academics, but also other knowledge making groups such as regional geographical society networks of volunteers, teachers and the lantern-slide lectures of professional independent 'popularizers of science'.[1635]

This chapter frames a hitherto invisible phase in the evolution of the Society's views of women's ability to contribute useful geographical knowledge. In underscoring the utility of sensational effects and visualization techniques to the Society, I have evidenced the partly distinct, partly mutually-constituting relationship between photography in lantern-

[1635] Lightman, *Victorian Popularizers Of Science,* 10-13.

slide form, with the added factor of hand-colouring. This highlights geographies of gendered production. The lantern-slides of many female Fellows in the RGS collections never illustrated lectures, but were, as explained in Chapter 4, instead displayed in a stand in the Photography Room or in the museum. Despite notions of visual objectivity at a time of academic professionalization gender cut across, and inflected, the authority of images.

CHAPTER 10. CONCLUSIONS: TRAVELLING LIGHT

This thesis has investigated the RGS's engagement with the technology of the magic lantern and lantern-slides between c. 1885 and 1924. It has provided a historical geographical portrait of the RGS lantern-slide collections c. 1886-1960, and the RGS lantern-slide practices between c.1885 and 1924. Via attentive exploration of the spatial and temporal nuances of lantern-slide circulation I offer some general understandings of the nature of geographical knowledge production and its shaping by lantern-slides in RGS's lantern-slide lectures between c.1885 and 1924. This elucidates how the Society honoured its founding ambitions of promoting and diffusing geographical knowledge.[1636] Below I summarize the adoption, circulation and effects of the Society's engagement with the lantern.

Advent of the lantern

By adopting the theoretical concept of 'travelling landscape-objects', and by employing sources discussed in Chapter 3, I have modelled the RGS lantern-slide collections.[1637] Paradoxically, that chapter also brought to light some of the limitations of contemporary technology and the value of material copies of the RGS journals. Chapter 4 explained the introduction of the lantern to the RGS and the resistance that arose in parallel to this.

The thesis shows that lantern-slides '[…] tell intriguing stories which might either compliment or contradict the stories they graphically represent.'[1638] At the RGS the lantern and lantern-slides were, when their use was first suggested, anthropomorphized since the lantern was

[1636] RGS Founding charter, 24 May 1830 in Driver, *Geography Militant,* 27.
[1637] della Dora, Travelling landscape-objects, 343.
[1638] della Dora, 350

associated with the telling of biblical stories for audiences of children. However, here I want to suggest that the metaphor of the animistic fetish,proposed by Latour, is more apposite than that of the icon in understanding the adoption, resistance to and effects of the lantern. The lantern, like Latour's theoretical fetish, was the subject of idolatry.[1639] Later lantern-slides were fetishized by the RGS reformers who promoted the medium's perceived ability to tell stories of secular science. This occurred at as anthropology and social sciences were being professionalizing and, as Chapters 6 to 8 suggested, their influence was visible amongst the RGS Fellowship's interpretations of lantern-slide projections. 'Along the way, however, the real master has disappeared! The object, which was nothing, is now doing something.'[1640] Thus stated Latour of the fetishistic object, taken here as the lantern. Contrary to Otter who was convinced by Armstrong's tri-partite typology of optical devices, this thesis suggests that the lantern was not just a projecting device. Instead, as it was employed in the RGS lectures, it transferred images from one location to another, magnifying images and creating illusions in motion.[1641] Moreover, this study shows that these processes occurred chiastically between the lantern and the screen, and between the audiences and the images they perceived.

The concept of 'travelling landscape-objects' enabled me to trace the patterns of circulation of the material form of lantern-slides into, within and out of, the RGS and the processes of deposition, accumulation and dispersal that gradually produced the RGS lantern-slide collections. One of the key effects of the adoption of the lantern was the creation of this

[1639] Latour, *On The Modern Cult of The Factish Gods*, 8-9.
[1640] Latour, *On The Modern Cult of The Factish Gods*, 8-9.
[1641] Armstrong, *Victorian Glassworlds* in McDonagh, Introduction: Roundtable: *Victorian Glassworlds,* 98.

collection. della Dora placed importance on the fact that 'Size, weight and mass-reproduction' were conditions of iconic objects' circulation and, in turn, capacity to circulate place.[1642] This study does not refute this, but it shows that perceptions of the value of these factors changed significantly between c. 1886 and 1955 and, indeed, proportionally in relation to shifts in geographical imaginaries. As the foregoing chapters demonstrated lantern-slides saw a number of revolutionary identity reassignments; from the iconoclash of their introduction, to their normative ubiquity in RGS practices by 1930, to the final iconoclasm of their destruction and phasing out between 1951 and 1954. This scheme, however, was specific to the Society, and should only be applied to other contexts cautiously.

Circulation of the lantern

A further effect of the adoption of the lantern was the gradual circulation of the medium across RGS knowledge making geographical projections spaces. Chapters 5, 6 and 7 assessed the incremental introduction of the lantern and lantern-slides in three key lectures across a transition period between c.1886 and 1888. I demonstrated that there was no singularity behind the adoption of the medium since the specific effects of the use of the lantern within each of these three meetings was subtly distinct. This can partly be explained by parts of the Fellowship and Council's resistance to the lantern. The experimental testing of the lantern within these three lectures between c.1886 and 1888 showed how the meaning and value assigned to lantern-slides in knowledge making emerged from the geographical projections assemblage of lantern, screen and, critically,

[1642] Della Dora, Travelling landscape-objects, 350.

audiences.[1643] The RGS Fellowship was shown to have been active in authorizing the medium. This also evidenced how lantern-slides were gradually authorized to accrue value as a currency of knowledge transaction, and in the manner of 'go-betweens' that brokered spaces, in RGS practices and between the RGS and other institutions.[1644]

In the manner of 'image machines', Chapters 5 to 9 have started to make visible the composition of the RGS audiences at lectures, and their active role in interpreting images and producing geographical knowledge.[1645] The lantern, Chapters 4 to 10 argued, facilitated the exhibition and display of knowledge making processes of recording, evidencing and analysis on a greater visible visual scale. When understood as an image making device of 'transport phenomena' Chapter 6 delineated how the lantern mobilized and circulated geographical knowledge by bringing Mackinder to the attention of the RGS in 1886 and, in turn, by bringing geography to the attention of the Oxford authorities in 1887.[1646] Further evidence of historical perceptions of the lantern's circulation of geographical knowledge was presented in Chapter 7 where I argued that Freshfield harnessed the medium to impart the geographical methods of knowledge recording and evidencing with images, analysis and synthesis that were in line with the positivist scientific methods of the time. Yet in acknowledging that the RGS and geographical method of synthesis were rendered visible via the lantern, I do not advocate technological-determinism in historical geographical processes of change. Thus I have argued for the ongoing importance of the specific social assemblages

[1643] Reeves, *Recollections of A Geographer*.
[1644] Schaffer, Roberts, Raj and Delbourgo (Eds), *The Brokered World.*
[1645] Schaffer, Transport phenomena, 76.
[1646] Schaffer, Transport phenomena, 75.

engaging with the lantern on a case by case basis.

This thesis suggests a relationship between the scale of visual knowledge and the authority of that knowledge. The lantern enabled more people to witness geography. Finally, in its focus on the role of the lantern in knowledge making and educational schemes that concerned the Fellowship, new audiences beyond the Society and audiences of young people, the thesis acknowledged the active role of audiences across a range of locations in discursively shaping the content and practices of geography. The body of knowledge known as geography was consensually created within the socio-techno assemblage of geographical projections spaces. These were therefore experimental spaces. No two gatherings comprised identical elements. Moreover, they often transcended the architectural incarnations of the RGS.

However, the powerful emotive responses of RGS audiences in geographical projections spaces are testament to the fact that knowledge, and insight, cannot always be taught or learnt. Instead insight has to be *felt*. This is often experienced in physical interactions, but the discussions of virtual travel provided above, draw attention to how the 'transport phenomena' of 'illusions in motion' could also be engendered via the imagination.[1647] This informs current wider concerns with 'knowledge in transit,' by evidencing the particular ways in which knowledge was made via lantern-slide projections in lectures, and thus how concepts of geography were made through motion engendered by audiences who visualized, and interpreted, these projections. [1648]

[1647] Schaffer, Transport phenomena, 75.
[1648] della Dora, Travelling landscape-objects, 334–354; Secord, Knowledge in transit, 664.

In Chapters 5 and 6 I argued for a number of inverted perspectives. The older-medium of the lantern was the kelson undergirding the creation of the 'new', international and interregional, geography. The chapters above explored a number of geographical projections spaces and showed that histories of the RGS and of geography, though partly entwined, draw from and feed into broader metropolitan, national and international phenomena. Chapter 4 identified the connections between the RGS and the Société de Géographie in Paris. Chapter 6 brought new understandings to the RGS's dealings with the OUE movement and established a relationship between the OUE and the Co-operative Society. Chapters 5 and 10 brought to light significant parallels between the RGS and regional geographical societies, notably the Manchester Geographical Society. Each of the empirical chapters 5 to 9 decentre the preeminence of the RGS in histories of geography and extend the geographies of geographical knowledge by tracing some of the social relationships via which knowledge and practices were exchanged, notably via lantern-slide projections, thereby demonstrating new directions of knowledge flow. These chapters established connections between influential RGS figures such as Galton, Bates, Freshfield, Keltie and Mackinder with other learned societies, including the RI, the RAI, the SA, the RPI and the Alpine Club. From this I infer varying degrees of mutualism between individuals active within the RGS and these institutions. This highlights the need for a detailed contouring of the RGS's changing relations with these London-based societies.

This thesis has demonstrated the Society's engagement with a multiplicity of visual and verbal narrative forms, from the verbal lecture to

photographic images, hand-drawn images and maps. Distinctions between these forms are queried. Whilst I have demonstrated the role of the lantern in promoting, and gaining recognition for the utility of photography, the thesis shows that the practice of giving oral testimony remained important. Nevertheless, the uptake of photography engendered knowledge making opportunities for some, and restraints for others. Photographic evidence substantiated knowledge but its authority overlapped with personal connections and social lineages of trust. Chapters 5 to 8 revealed how rhetoric remained a powerful force in the production of geographical knowledge even after the transition period and adoption of the lantern. This demonstrated how knowledge was produced not only through communication, but via its circulation, ie. processes of remediation in various material forms.

This investigation elucidated the imbrication of these knowledge forms and demonstrated the illusion of academic boundaries between fields of research. An additional significant finding in Chapters 6, 7 and 8, notably, was the contingent nature of geography even as it was professionalized to the scientific ways of knowing of geology and the emergent human sciences. The thesis makes a case for historical studies that recognise inter-disciplinarity. Yet investigations of the physics of knowledge and knowing in which human and non-human instruments were active in fostering inter-disciplinarity. The inter-disciplinary nature of geography in the later nineteenth century as the discipline was in the *process* of being disciplined and institutionalized across a number of academic and non-academic settings. Disciplinary boundaries, content and methods were thus in flux, but here we see a characteristic of the discipline; that of reaching out

and transcending boundaries to show the inter-relations, here, of physical processes of nature. This aspect of geography would later, as Bell recognised, manifest itself in early twentieth-century visions of national-interactions and human-environmental relations propagated by Geddes, Herbertson, Newbigin and Mill.[1649]

The foregoing discussions evidence the powerful aesthetic effect and affective responses to RGS projections. These reflect the role of the RGS as a chiastic interstice of aesthetic and scientific authority. These meetings communicated increasingly technical subjects, often of a physical scientific nature, to Evening meeting audiences. Simultaneously, as sciences professionalized and became increasingly specialized, the RGS cultivated a chiastic space in the Evening meetings to bring together diverging practitioners. The Scientific Evening meetings, discussed in relation to Vaughan Cornish, constituted an attempt to cultivate reciprocity and unity across the Fellowship, a trait characteristic of later nineteenth-century science, as Herbert argued.[1650] Therefore, following Golinski's argument, the RGS lantern-slide lectures contest histories of science that focus on institutionalization and the erecting of disciplinary boundaries.[1651] This undergirds an argument for the period of this study, c.1886-1924, as a chiastic interstice in which the emergent discipline of geography was established not through the taking of ground from geology, nor solely by focusing upon the distribution of humans across the surface of the earth, but by unifying a range of physical sciences within a geographical frame and mediating between them.

[1649] Bell, Reshaping boundaries, 151-175.
[1650] C. Herbert, *Victorian Relativity, Radical Thought and Scientific Discovery,* University of Chicago Press, 2001, 9-10.
[1651] Golinski, *Making Natural Knowledge, Constructivism and The History of Science,* 122.

Lantern effects

I have considered how the transposition of the concept of geographical projections on to lantern-slide practices can be used to examine issues concerning historical geographical-particular visual geographical knowledge making practices and how they affirm, question and contribute new understandings to existing scholarship. Critically, images, as ambiguous or 'mercurial' media of enchantment, served both purposes.[1652] These distinct terms are relative to specific communication practices and the fabric of audiences before whom they are performed. In assessing the effects of lantern-slides in creating geographical knowledge the study demonstrated that the harnessing of lantern-slides contributed to the shifting of identities of those, including John Thomson, Halford Mackinder, Douglas Freshfield, H. W. Simpson and Vaughan Cornish, who participated in lectures as 'scientific practitioners', 'would be professionalizers' and producers of knowledge with less scientific expertise.[1653]

This thesis confirms the collective, material, sensuous and discursive production of knowledge and materiality, that scholars of visual media have perceived.[1654] Via these processes multiple, contingent and changing, concepts of space, and thus geography, were produced. This revealed individual responses to lantern-slides and the geographical knowledge they conveyed, authorized (or not) within a context of public and collective knowledge making in different types of RGS lecture. This contributes to 'the

[1652] Schneider, *Culture and Enchantment*, 1-29.
[1653] Lightman, *Victorian Popularizers Of Science,* 10-13.
[1654] Lutz and Collins, The Photograph as an Intersection of Gazes: The example of National Geographic in Wells (Ed), *The Photography Reader*, Routledge, 2003, 354-374.Daston, and Galison, "The image of objectivity" *Representations* 40 (Fall 1992) in J. Tucker, Objectivity, Collective Sight, and Scientific Personae, 656; Langford, *Suspended Conversations.*

comparative history of variations within a larger pattern of unity' to which numerous historical geographers are now sensitive by showing definitions of authority were constructed in relation to specific instruments such as the magic lantern, varying lantern-slide forms and changing RGS audiences.[1655]

Numinous projections

The chapters above evidenced the powerful impact of words and images in the geographical projections space, and as these were translated and transmitted via edited discussions. In understanding lantern-slide lectures as worship, in the manner of 'numinous materialities' the RGS audience experiences of communion with lantern-slide images and their mediation of a space beyond the material surface was discerned.[1656] This was a 'multi-sensorial experience' and a 'process of transformation worship'.[1657] The iconic paradox and ability to 'blur the boundaries between referent and symbol, same and otherness, temporal and eternal, immanent and transcendent' does apply to audiences of RGS lantern-slide lecturers.[1658] Historically, the lantern, in a sense, did distance images and audiences, but it was the process of projection, that transported an image across space and magnified it upon a screen, that brought audiences closer to the lantern-slides. Far from repelling or distancing audiences this attracted a greater number and diversity of Fellows, practitioners of geography and knowledge makers.

[1655] Lorimer, Telling small stories, 197, cited in Keighren, Giving voice to geography, 4.
[1656] della Dora, Inverting perspective, 240.
[1657] della Dora, Inverting perspective, 241.
[1658] della Dora, Inverting perspective, 241-242.

The RGS lantern-slide projections engendered currents of disenchantment as much as enchantment to the Society.[1659] If initially, c. 1886-1888 lantern-slides were viewed with caution by some, then the authorization of the medium in 1888 suggests that some lantern-slide projections were perceived to have transformative qualities. Freshfield led the use of lantern-slide projections for evidencing truth-claims and inductive reasoning. This period c.1888-1892 can be understood as one of perceptions, on the part of some Fellows, of disenchantment. Such negative effects occurred even as the more positive ones of the growth of a community of geographers emerged at Oxford, the regional geography societies and in response to the Keltie Education Report. Significantly, this brings important dimensionality to understandings to the admission of women debate in 1892-3. The disenchantment came not from the projected images per se, but how they were harnessed and interpreted, and the structures of meaning and interpretive practices they were cast in relation to in discussions. Freshfield, most especially, in his comments and harnessing of images for analysis, helped to disenchant images of a perceived geographical nature, the lecture experience and geographical narratives. Paradoxically, he was involved as much in the bringing of enchantment as disenchantment to the RGS knowledge making practices. Although visionary in what he saw geography could become, he was blind to the habits of substantial tracts of the Fellowship. They, however, could not be ignored as they were the source of funding for all future educational and scientific projects.

A further effect was the Fellowship's affective responses to lantern-

[1659] Vermeir, *The magic of the magic lantern (1660–1700),* 158; Nadis, Review of Simon During, *Modern Enchantments,* 896.

slides and the lectures in which they featured. Della Dora argued that landscape-objects travel, they are set in physical and conceptual motion; they shape geographical imaginaries about places from which the viewer might be disconnected and only known virtually.[1660] The notion of circulation then also applies at the level of emotional engagement and affect. The transformative effects attributed to landscape-objects render them 'media of exchange between one place and another' as they become attributed with the powers to be dynamic *vehicles* for the circulation of place through space and time.[1661] Chapters 7, 8 and 9 above revealed historical virtual travel experiences of RGS audience in lantern-slide lectures. A belief in the 'numinous' agency of objects was apparent.

I am reluctant to become a Latourian anti-fetishist and deny the veracity of these lived, embodied and cognitive experiences.[1662] 'travelling landscape-objects,' whether photographic or other, were rather perceived to move, or not, either as physical material entities or conceptually by human beings. The movement was not innate, autonomous or self-driven by these objects, but attributed to them by human actors and technologies that in turn, became 'travelling landscape-objects', thereby becoming bundles of attributed visions, perceptions and concepts that they project in particular historical-geographical contexts in order to construct meaning in the manner of 'numinous materialities' and acts of fetishiziation.[1663]

The RGS geographical projections spaces, of audiences, lantern and lantern-slide projections assessed above saw the expression of emotional

[1660] della Dora, Travelling landscape-objects, 343-347.
[1661] W.T.J., Mitchell (Ed) *Landscape and power.* The University of Chicago Press, 2002 [1994]; M. Sheller, and J. Urry, The new mobilities paradigm. *Environment and Planning A* 38, 2006, 207–26 in della Dora, Travelling landscape-objects, 343.
[1662] Latour, *The Modern Cult of The Factish Gods*, 8.
[1663] della Dora, Inverting perspective, 239-246; Latour, *The Modern Cult of The Factish Gods*, 8.

responses. This simultaneously particularized, in Chapters 5 to 9, resistance to either the lantern, specific lectures employing lantern-slides or the projection of particular types of lantern-slides in specific contexts. From there the significance of such effects on the Society's institutional practices, and the growth of a notional visual epistemology of geography, have been observed.

Geographical modernities

In the manner of 'transport phenomena' this thesis has brought us to a 'threshold space' whence wider prospects are discernable.[1664] It has shown the transformative effects attributed to lantern-slide 'travelling landscape-objects' and how they could be dynamic *vehicles* for the circulation of place through space and time.[1665] Consequently, I want to consider issues of late nineteenth-century modernity in relation to the qualities and effects of the RGS audiences' engagements with diverse lantern-slide modalities.

Chapters 5 to 9 revealed that the RGS staff and officers perceived the adoption of the lantern as a significant shift in the Society's affairs. The emotive tone of responses to lantern projections suggests the power of the aesthetic appeal and the rhetorical importance of aesthetics, understood as *knowing through feeling* as described in Chapter 3, in developing geographical knowledge. A historical geography of lantern-slide projection aesthetics can therefore start to be discerned. The aesthetics of the RGS stream of geography and the nacsent academic geography emerged within the context of ongoing veins of romanticism, and the emergent aestheticism

[1664] Schaffer, Transport phenomena, 75.
[1665] Mitchell (Ed) *Landscape and power;* Sheller and Urry, The new mobilities paradigm, 207–26 in della Dora, Travelling landscape-objects, 343.

and symbolist movements, often associated with a notional fin-de-siècle modernity.

Via the lantern and photographic lantern-slides, in the Society's interactive, multimedia lantern lectures, the RGS practices, and the knowledge makers and audiences it authorized, were synchronized with wider currents of contemporary culture and science. The RGS aligned itself with the visual technologies and ways of seeing of the British population living in a world, albeit a predominantly urban one, of ever greater levels of exchange between the practices and subjects of the entertainment and scientific cultures. This was the notional later nineteenth-century modernity, and it was via the lantern that the RGS, the home of explorers, travellers and geographers, continued its own journey, begun in 1830 with the aims of promoting geography as both a branch of knowledge and entertainment.

Considering these ideas in relation to Crary's *Techniques of the Observer*, reviewed in Chapter 2, this suggests that the history of the earlier medium of the lantern needs to be accounted for.[1666] Its effects prior to the mass availability of stereoscopes in early nineteenth-century Britain, and the medium's entwined history with stereoscopes throughout the nineteenth century have yet to be studied. The waxing and waning of visual practices around these technologies and the influence of the factor of transformations to light technologies upon them might be explored. Yet the effects of the exposure of RGS audiences to specific images, and the experiences such images engendered and interpretations drawn from them, still lack.

Lantern use, Chapter 7 suggests, offers a new field for exploring the persistence and evolution of the concept of the picturesque within this

[1666] Crary, *Techniques of The Observer.*

putative period of late nineteenth-century modernity. A novel modernity did not replace a picturesque mode outright. The RGS reformers did themselves equate the adoption of the lantern with other significant trasnformations in the Society, its Fellowship and practices. Yet Cosgrove's contrasting of the picturesque and modernity is untenable here. This thesis demonstrates how the term picturesque retained both a relevance and continued to serve as a currency, even as picturesque visions were remdediated by novel visual technologies such as the camera, and evolving ones such as the lantern. Thanks to the combining of lantern projection and photography the notion of the picturesque continued to be projected on to visions of human and topographical subjects in the field and in the lecture theatre. Indeed the perception of such images indicates the endurance of the picturesque as a space for negotiating human and topographical relations. The picturesque continued to frame, at times mutually-constituting and others contradicting, artistic and scientific interests. Significantly, older picturesque forms were remediated in lantern-slide forms via processes of photomechanical reproduction. In doing so these older forms were perpetuated, set in new patterns and projected to more diverse, more numerous audiences on wider geographical ranges and on a more frequent basis.

Observed through this investigation, the RGS can be likened to a picture house and an observatory. Although I agree with Crary's questioning of the camera's role as the principal vector of nineteenth-century modernity, I have queried a number of his perspectives. The RGS geographical projections spaces, and the lantern-slides projected in them, were mobile since they transcended the RGS architectural settings. As with

stereoscopes the geographical projections spaces were ‘‘abstracted from any founding site or referent”.[1667] The effect of this was to revert the focus of the action on to the collective interaction of the Fellowship with the lantern projections. Nevertheless, when the RGS constructed its own hall in 1929-30, geographical projections became once again tethered and bounded to a location and an architectural setting in the manner of camera obscuras. [1668] Nevertheless this investigation of the RGS lantern-slide collections and their contingent historical geographies of display and reception, affords a picture of the varying scales of activity of individuals associated with the RGS. The Society’s brand of geography is situated within London’s scientific entertainment lecturing landscape, a wider setting of British visual science practices, as well as an international one.[1669]

Finally, the thesis’s timeframe of c.1885-1924 demonstrates that no facile periodicization around the WW1 period can be assumed. The time frame of 1885-1924 takes in the often-assumed break in British culture engendered by World War One in 1914. Yet, in a discussion in Chapter 9 of the independent commercial lecturer Julia Henshaw’s Children’s Christmas lectures of 1914 and 1924, the temporal focus highlights multiple continuities in RGS visual practices. For example, the persistence of lantern use into the 1920s, even as moving film increasingly featured in societal practices, is noted. Continuity amongst the RGS Officers is observed; an older generation of RGS Officers and Fellows who did not serve on the war front were, nevertheless, active and prominent within the Society during,

[1667] Crary, *Techniques of The Observer,* 14
[1668] MacDonald, Technician of Light, 269-279.
[1669] Hays, The London lecturing empire’, in Inkster, and Morrell (Eds), *Metropolis and province,* 91–112; V. R. Schwartz, and Przyblyski, Cities and the built environment, 165-166, *The Nineteenth-Century Visual Culture Reader*; Gunn, *The Public Culture Of The Victorian Middle Class*, 207; Naylor, Introduction: historical geographies of science, 1–12; Leveridge, ‘Limelights and shadows’.

and after, the war years and throughout a period when the Fellowship was severely reduced by war fatalities. Douglas Freshfield and Thomas Holdich, notably, embodied the Society's memories and its past practices. That earlier generation, amongst whom were some of the reformers' of the 1880s were influential forces in shaping the Society throughout the war years and in its immediate aftermath, a period that saw as many disjunctures with past lantern and lecturing practices as it did continuities. In concluding that the RGS social and technological innovations predated 1914-18, this thesis undermines the oft-drawn association of WW1 with a notional modernity.

Geographical science and geo-aesthetics

This thesis has argued that lantern-slides significantly shaped knowledge at the RGS. Lantern-slides, within the RGS lectures and post-lecture discussions, and the transcribed and published accounts of these in the *Proceedings* and *GJ,* need to be recognized as having played a critical role in the epistemology of geography, and historical-geographical constructions of scientific authority and methods of communicating and producing geographical knowledge between c.1886 and 1924. I have shown the fluidity of definitions of scientific and popular, and in doing so have questioned the grounds on which such a rigid dichotomy between the two terms has historically been constructed, specifically around the aesthetics of the visual and verbal languages adopted, and the people, practices and imagery associated with them. This study thus queries Secord's assertion, seen in Chapter 2, that 'popular science' engendered anonymous, mass readerships and audiences.[1670] In addition, I show that

[1670] Secord, *Victorian Sensation,* 524-25 in Lightman, *Victorian popularizers of science: designing nature for new audiences*, 10.

notions of opposing popular and scientific practices and practitioners were questionable on the grounds that, in the rapidly specializing climate of late nineteenth-century science, practitioners in one field were inexpert in other fields. Finally, the very act of adapting registers and media of knowledge communication to less expert audiences implies the visibility, and authority, of audiences. Practitioners of science who gave lectures, this study shows, were also portrayed as audience members who responded emotionally as much as intellectually to images and ideas, and who participated actively in acts of interpretation and collective and dialectical knowledge making. The commonalities in the responses of the Evening scientific and Technical meeting audiences to the aesthetics of topographical photographs projected via the lantern constitute the clearest evidence of the claim that 'negotiations around such boundaries lay at the heart of many debates at the RGS in the Victorian period and its attempts to promote its new branch of science'.[1671]

Arguably, the roots of British geography lie as much within late nineteenth-century standards of scientific practice in the period, as within the audience needs of Mackinder's OUE lectures. The shift in the multi-various subject's status was directly related to the lantern and the scale and diversity of audiences that the technology's use drew to the Society. These findings lend weight to Stoddart's view that it was ironic that geography came to be recognized as a science without the aid of 'strictly scientific' men.[1672] In a similar chiastic twist, the utility of geography was rendered visible to academia at the end of the nineteenth century, via the medium of play, trickery and entertainment of the lantern. Therefore we might assert

[1671] Ryan, Photography, visual revolutions and Victorian geography, 215.
[1672] Stoddart, The RGS and the 'New Geography',195.

that geography came to be recognized as a science without the aid of strictly scientific methods. However, this begs the question as to whether or not methods of demonstration ever were the exclusive preserve of science. This leads me to conclude that the 'new' notionally modern academic discipline of geography, ironically, emerged not so much as a science, but as an aesthetic practice of knowing, visualizing and feeling. Additionally, it came into being and into greater public prominence in the academic, public and political eye as a visual and discursive practice, collectively made through acts of performance, rather than simply presentation, between images, words and human actors within the geographical projections assemblage. This assemblage was a space of experiment and transformation.

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